CITY OF MANCHESTER.

REPORT

ON THE

Health of the City of Manchester,

1908.

BY

JAMES NIVEN, M.A., M.B.

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Public Health Office,
Town Hall, Manchester,
August 17th, 1909.

My Lord Mayor, Aldermen, and Members
of the Council.

I have the honour to submit to you my Annual Report on the Health of Manchester for the year 1908.

The statistical statement furnishes grounds for satisfaction in the great diminution of mortality in each of the main divisions of the City which has taken place during the last 20 years, an improvement which has extended to every period of life.

Notwithstanding the maintenance of improvement in the general death-rate, the year was marked by increase in the notifiable diseases. The resources of the Fever Hospitals were severely taxed, and the accommodation was insufficient for the number requiring admission. The prevention of infectious disease depends, not merely on hospital accommodation, but also on careful investigation of the sources of infection and the application of corresponding measures. The existing staff of Sanitary Inspectors, however, can scarce give the time required for such work.

Under Enteric Fever it will be found that a case is recorded illustrating the power of the bacilli to persist in an individual for a number of years in an actively infective condition.

Attention is called to an account of the acute poisonous effects of eating highly arsenical sweets, witnessed in a number of school children, which contrast strongly, in the absence of fatalities, with the effects of chronic poisoning by arsenic.

The improvement recorded in previous reports under Phthisis is maintained. Attention is again called to the need for support of many families, when the head of the household is attacked by Phthisis, if we are to secure timely applications for admission into Hospital.

Reasons are given for aiming at the entire eradication of Tuberculosis in cattle. There appears to be a growing hope that by some method of prophylactic treatment it may be possible to prevent cattle from becoming Tuberculous, but the prospect is uncertain.

The question of housing is discussed, but no departure from the existing procedure is advised. Good progress is being made in replacing the unwholesome middens and pails by water-closets.

The work of the Health Visitors, which now falls under the Infant Life Preservation Sub-Committee, is described by the Lady Superintendent in a statement which marks progress, and holds out a prospect of good work. It also shows that the Ladies' Public Health Society have found a new and important sphere of effort.

Reports on the Hospitals are given by the Medical Superintendents.

The report on the health of Withington is incorporated, and brief reports from the Sanitary Superintendent, the Superintendent of the Cleansing Department, and the Chairman of the Markets Department are included.

The report of the Midwives Supervising Committee is also incorporated. As this report has already been before the Council, comment is unnecessary.

Acknowledgment is due to the valuable help which has been received from the Medical Officers and the Staff of the Public Health Office.

I have the honour to be, my Lord Mayor,

Your obedient servant,

JAMES NIVEN,

Medical Officer of Health.

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ANNUAL REPORT.

STATISTICAL.

The following are general statistics for the year 1908:—

Area of the City in acres		19,059
Estimated population at the middle of 1908	Males 311,145; Females 337,701	648,846
No. of persons per acre		34
No. of inhabited houses at the Census taking, 1901		121,688
No. of uninhabited houses at the Census taking, 1901		9,525
Total No. of tenements		125,875
No. of tenements at the Census taking, 1901, 4 rooms and under		62,749
Average No. of persons at the Census taking, 1901, in houses of 4 rooms and under		4·27
Persons married per 1,000 of population in the Manchester, Chorlton, and Prestwich Unions		16·65
Births in the City of Manchester	Males 9,720; Females 9,321	19,041
Annual birth-rate per 1,000 of population		28·89
Deaths	Males 6,281; Females 5,649	11,930
Annual death-rate per 1,000 of population	Males 19·87; Females 16·47 persons	18·10
Deaths under 1 year of age per 1,000 births		152·5
Excess of registered births over deaths		7,111
Estimated increase of population during the year		5,688
Annual birth-rate exclusive of Moss Side and Withington		30·04
„ death-rate „ „ „		18·83
Infantile „ „ „ „		156·2
Percentage mortality occurring in public institutions		25·98
The mean death-rate in 1891-1900 was		23·27
„ birth-rate „ „ „		33·09

Continued Lowered Death-rate, Slight Increase in the Birth-rate.

On comparison of the above figures with those given in Table E of the Appendix, it will be seen that the birth-rate is higher by 0·5 per 1,000 than it was in the preceding year, while the death-rate was higher by 0·2 per 1,000. These figures are satisfactory, if we have regard to the acute distress which prevailed in the last half of the year. Excluding Moss Side and Withington, the birth-rate was higher by 0·6 per 1,000, and the death-rate was only 0·1 per 1,000 higher. The marriage-rate for the City was, however, lower than in any previous year, with the exception of 1904. It is difficult to say whether these figures are approximately correct. The increase in the birth-rate may indicate an underestimated population. In that case the calculated death-rate would be in excess of the true death-rate.

The excess of registered births over deaths continues to be considerably greater than the Registrar-General's estimate of the increase of population. Assuming that the latter is not in defect it would appear, therefore, that Manchester contributes materially to the population of other districts, a consideration which adds importance to the condition of its population. The contribution so made is, no doubt, for the most part distributed in the immediate vicinity of the City, and the tendency is thus for its more central portions to become the depôt and exchange of the poorest elements in this part of Lancashire, except in so far as this tendency is counteracted by strenuous social, sanitary, and other administrative effort.

The calculated death-rate for the City, exclusive of Moss Side and Withington, was in 1908 4·44 per 1,000 below the mean death-rate of the years 1891-1900, or 19 per cent., while the birth-rate was 3·05 lower than the birth-rate for the same period, or 9·2 per cent.

The saving of lives in 1908 represented by this difference in the death-rate is 2,551. In actual life value, in prevention of sickness, and in increased efficiency this represents a large sum. The sums spent on securing this result, however, have also been large. The average calculated death-rate in the five years 1904-1908 is 19·4, as compared with 20·6 for the five years 1899-1903. The advance thus made, if it be permanent, is both striking and satisfactory.

The deaths of infants per 1,000 born alive in the older City was 156·2 per 1,000, in spite of a moderately high Diarrhœa-rate, thus approaching the lowest points hitherto reached, viz., 151·5 in 1902, and 152·1 in 1907. There is good reason to hope that further descent will occur.

Comparison with other Towns.

If, now, we refer to Table 1 extracted from the Annual Summary of the Registrar-General, we see that, in spite of the great progress which has been achieved, our relative position is still a very low one.

Of the 76 large towns there were, in 1907, 9 having a crude death-rate, 7 a corrected death-rate lower than Manchester.

In 1908, 9 had a lower crude death-rate, but only 5 a lower corrected death-rate.

If, however, we take the City before extension in 1904, in 1907 only 6, and in 1908 only 4, had a lower crude death-rate.

Nevertheless, there is a reasonable prospect that we are approaching the point when we shall begin to ascend.

The Annual Summary of the Registrar-General permits of further comparisons which deserve to receive consideration.

TABLE 1.—RECORDED AND CORRECTED DEATH-RATES PER 1,000 PERSONS LIVING IN 76 GREAT TOWNS IN 1908.

TOWNS, in the order of their Corrected Death-rates	Standard Death-rate *	Factor for Correction for Sex and Age Distribution †	Recorded Death-rate, 1908	Corrected Death-rate, 1908 ‡	Comparative Mortality Figure, 1908 §
Cols.	1	2	3	4	5
England and Wales	18·19	1·0000	14·69	14·69	1,000
England and Wales, less the 76 Towns	18·85	0·9652	14·50	14·00	953
76 Towns	17·13	1·0621	14·91	15·84	1,078
Hornsey	15·96	1·1400	8·31	9·47	645
Leyton	17·69	1·0285	10·42	10·72	730
King's Norton	17·40	1·0456	10·41	10·88	741
East Ham	17·05	1·0671	10·34	11·03	751
Walthamstow	17·21	1·0572	10·53	11·13	758
Hastings	18·92	0·9616	11·69	11·24	765
Willesden	16·96	1·0728	10·51	11·24	768
Handsworth	16·53	1·1007	10·73	11·81	804
Northampton	17·50	1·0397	11·55	12·01	818
Reading	17·59	1·0343	11·78	12·18	829
Southampton	18·30	0·9942	12·88	12·81	872
York	17·67	1·0297	12·63	13·01	886
Croydon	17·75	1·0250	12·77	13·09	891
West Hartlepool	16·57	1·0980	11·97	13·14	894
Norwich	19·07	0·9541	14·09	13·44	915
Tottenham	16·86	1·0791	12·54	13·53	921
Bournemouth.....	17·22	1·0566	12·85	13·58	924
Burton-on-Trent	16·93	1·0747	12·71	13·66	930
Great Yarmouth	19·88	0·9152	15·03	13·76	937
Leicester	17·05	1·0671	12·96	13·83	941
Aston Manor	16·41	1·1087	12·51	13·87	944
Bristol	17·71	1·0273	13·56	13·93	948
Ipswich	18·63	0·9766	14·29	13·96	950
Devonport	17·35	1·0486	13·30	13·95	950
Derby	16·88	1·0778	13·06	14·08	958
Cardiff	16·73	1·0875	12·96	14·09	959
Portsmouth	17·72	1·0267	13·76	14·13	962
Brighton	18·46	0·9856	14·72	14·51	988
London	17·31	1·0511	13·82	14·53	989
Plymouth	18·66	0·9750	14·99	14·62	995
Smethwick	16·63	1·0940	13·37	14·63	996
Wolverhampton	17·59	1·0343	14·29	14·78	1,006
West Ham	17·01	1·0696	13·86	14·82	1,009
Wallasey	16·63	1·0940	13·56	14·83	1,010
Barrow-in-Furness	16·01	1·1364	13·07	14·85	1,011
Halifax	16·79	1·0836	14·11	15·29	1,041
Coventry.....	18·15	1·0024	15·39	15·43	1,050
Grimsby	16·99	1·0709	14·43	15·45	1,052
Gateshead.....	17·26	1·0541	14·93	15·74	1,071

For Notes * † ‡ § see page 5.

TABLE 1 (continued).—RECORDED AND CORRECTED DEATH-RATES PER 1,000 PERSONS LIVING IN 76 GREAT TOWNS IN 1908—*continued.*

TOWNS, in the order of their Corrected Death-rates	Standard Death-rate*	Factor for Correction for Sex and Age Distribution †	Recorded Death-rate, 1908	Corrected Death-rate, 1908 ‡	Comparative Mortality Figure, 1908 §
Cols.	1	2	3	4	5
Walsall	17·18	1·0590	14·93	15·81	1,076
Nottingham	17·27	1·0535	15·22	16·03	1,091
West Bromwich	18·04	1·0085	16·16	16·30	1,110
South Shields	17·19	1·0584	15·47	16·37	1,114
Rotherham	17·59	1·0343	16·02	16·57	1,128
Hull	17·75	1·0250	16·17	16·57	1,128
Leeds	16·68	1·0908	15·28	16·67	1,135
Birkenhead	17·07	1·0658	15·76	16·80	1,144
St. Helens	16·79	1·0836	15·71	17·02	1,159
Sheffield	16·88	1·0778	15·84	17·07	1,162
Birmingham	16·91	1·0759	15·91	17·12	1,165
Bradford	16·46	1·1053	15·54	17·18	1,170
Newcastle-on-Tyne	16·89	1·0772	15·99	17·22	1,172
Newport (Mon.)	16·84	1·0804	16·15	17·45	1,188
Bolton	16·09	1·1308	15·45	17·47	1,189
Bury	16·25	1·1196	15·81	17·70	1,205
Blackburn	16·09	1·1308	15·70	17·75	1,208
Tynemouth	17·62	1·0326	17·51	18·08	1,231
Sunderland	17·64	1·0314	17·72	18·28	1,244
Huddersfield	16·96	1·0728	17·09	18·33	1,248
Warrington	16·89	1·0772	17·05	18·37	1,251
Stockton-on-Tees	17·35	1·0486	17·95	18·82	1,281
Preston	16·63	1·0940	17·97	19·66	1,338
Stockport	16·84	1·0804	18·22	19·68	1,340
Salford	16·47	1·1047	17·82	19·69	1,340
Wigan	16·58	1·0973	17·99	19·74	1,344
Swansea	16·96	1·0728	18·55	19·90	1,355
Bootle	16·52	1·1013	18·24	20·09	1,368
Hanley	16·65	1·0927	18·43	20·14	1,371
Burnley	16·14	1·1273	17·89	20·17	1,373
Rhondda	16·54	1·1000	18·38	20·22	1,376
Merthyr Tydfil	17·16	1·0603	19·14	20·29	1,381
Manchester	16·32	1·1148	18·23	20·32	1,383
Rochdale	16·45	1·1060	18·39	20·34	1,385
Liverpool	17·00	1·0702	19·18	20·53	1,398
Middlesbrough	16·71	1·0888	19·77	21·53	1,466
Oldham	16·18	1·1245	19·83	22·30	1,518

* The Standard Death-rate signifies the rate at all ages calculated on the hypothesis that the rates for each sex at each of twelve age-periods in each town were the same as in England and Wales during the ten years 1891–1900, the rate at all ages in England and Wales during that period having been 18·21 per 1,000.

† The Factor or Correction is obtained by dividing the Standard Death-rate in England and Wales by the Standard Death-rate in each town, and is the figure by which the Recorded Death-rate should be multiplied in order to correct for variations of sex and age distribution.

‡ The Corrected Death-rate is the Recorded Death-rate multiplied by the Factor for Correction.

§ The Comparative Mortality Figure represents the Corrected Death-rate in each town compared with the Recorded Death-rate at all ages in England and Wales in 1908, taken as 1,000.

Death-rate relatively high at the middle periods of life.

Thus, Table 3, page 9, in the Annual Summary of the Registrar General, gives the death-rates for each of the 76 large towns at ages under 1 year, from 1 to 60, and at ages above 60. We thus find that the infantile mortality rate is higher in 9 towns, and that the death-rate above 60 is also higher in 9 other towns. At ages 1 to 60, however, only 3 towns have a higher death-rate. It is, in fact, at the middle period of life that the death-rate in Manchester is still excessive.

The same table also gives a comparison of the death-rates, at all ages, in the 76 great towns, for each quarter of the year.

In the first quarter of the year 9 towns have a higher death-rate, in the second quarter only 4, in the third quarter 9, and in the fourth quarter 7. This order is conditioned, in part at least, by the excessive death-rate in Manchester from Pneumonia, which affects adults most severely in the second quarter, and infants in the fourth.

In any discussion of health conditions it is necessary to take account of the conditions of business, and of the price of commodities. Other things being equal, there can be no doubt that a high degree of poverty is associated with a high death-rate. Usually other things are not equal. In one locality unhealthy occupations predominate, in another bad conditions of housing, in a third there is excessive intemperance. But poverty below a certain point means increased risk of disease. The following table supplies certain elements with regard to the conditions of the year :—

TABLE 2.—TOWNSHIP OF MANCHESTER.—PRICES PAID BY THE GUARDIANS FOR FLOUR, BUTCHERS' MEAT, AND COAL, ALSO THE AVERAGE WEEKLY NUMBER OF PERSONS IN RECEIPT OF RELIEF, DURING THE YEARS 1887–1908.

YEAR ENDING	PRICES OF PROVISIONS				PAUPERISM		BIRTH-RATE PER 1,000
	Flour per Sack of 280lbs.	Butchers' Meat, per lb.		Coal, per ton	Average number of Paupers relieved in each week		
		Beef	Mutton		Indoor	Outdoor	
		Coarse / Fine		Engine / House			
1887	25/2 to 30/6	-/3¾ -/6½	-/6½	5/6 8/4	3123	877	33·9
1888	24/- to 29/3	-/3¾ -/6½	-/6½	5/5 8/3	3130	713	33·3
1889	24/11 to 31/2	-/4½ -/6½	-/6½	5/8 8/7	3037	632	33·1
1890	24/9 to 29/11	-/5 -/7	-/7	7/- 9/9	2998	498	31·8
1891	27/3 to 28/11	-/4¼ -/6½	-/6½	8/8 11/2	3118	466	33·8
1892	26/4 to 28/5	-/4 -/6¼	-/6¼	7/6 10/2	3251	551	33·4
1893	21/8 to 25/1	-/3⅞ -/6¼	-/6¼	6/5 10/0	3277	586	33·4
1894	17/2 to 23/9	-/3¾ -/6	-/6	7/1 10/10	3328	395	31·8
1895	15/6 to 21/-	-/3¾ -/6	-/6	5/6 10/3	3343	618	33·4
1896	16/6 to 24/-	-/3⅝ -/5¾	-/5¾	5/7 9/1	3348	533	32·8
1897	17/3 to 33/9	-/3½ -/5⅝	-/5⅝	5/9 8/8	3476	697	32·9
1898	26/7 to 33/8	-/3½ -/5½	-/5½	6/2 8/4½	3519	732	32·3
1899	20/11 to 23/-	-/3½ -/5⅝	-/5⅝	7/5 9/11	3232	597	32·2
1900	20/9 to 22/9	-/3½ -/5½	-/5⅝	11/9¾ 14/2½	3189	686	32·4
1901	21/4 to 23/3	-/3⅝ -/5⅝	-/5⅝	11/8 15/2	3403	817	28·7
1902	20/11 to 24/3	-/3⅞ -/5¾	-/5¾	9/3 13/5½	3492	752	33·0
1903	21/10½ to 23/3	-/4⅜ -/6	-/5½	9/- 12/11¼	3521	812	31·7
1904	23/- to 28/6	-/4⅜ -/6	-/6	8/2 11/11	3486	1459	31·1
1905	23/- to 23/9	-/4⅜ -/6	-/6	7/6 10/9	3489	1588	29·0
1906	20/6 to 26/-	-/4¼ -/6	-/6	8/6 11/9	3359	1257	28·9
1907	20/3 to 25/6	-/4 -/6	-/5¼	11/2 14/5	3354	909	28·4
1908	25/6 to 29/6	-/4⅛ -/6	-/5⅜	11/2 14/6	3597	1199	28·9

It will be seen that the price of flour was considerably raised in 1908, and, though the price of meat as supplied to the Guardians was not higher, it was probably higher to consumers generally. House coal was dearer than it has been in any year except 1901. The depression of trade and the extent of unemployment, especially in the second half of the year, were excessive. Much relief was given outside the Poor Law, so that the increase shown by the figures for Poor Law relief do not reveal the extent of the impoverisation. There is, therefore, ground for satisfaction that the health of the community did not suffer immediately more than the figures reveal. But we are bound to have some degree of retrogression as a result of the misery experienced.

The number of deaths occurring in public institutions is another index of the extent of impoverishment. As will be seen from the following Table, the number of deaths so occurring was 3,099, or 26 per cent.

Table 3.—Populations—Deaths of Manchester Residents, 1908, in Public Institutions.

Township	Name of Institution	Census Population, 1901	Deaths, 1908
Ancoats	Ancoats Hospital	90	197
	Workhouse Casual Wards (Tame Street)	185	...
Central	New Bridge Street Workhouse	176	2
	Royal Infirmary	274	319
	St. Mary's Hospital	59	52
	Lock Hospital	26	...
	Eye and Ear Hospital	9	3
	Wood Street Mission	18	...
	Chetham Hospital	100	...
	Skin Hospital	...	...
St. George's	Girls' Home (Charter Street)	36	...
Cheetham	His Majesty's Prison	1,028	4
	Boys' Refuge	220	1
	Northern Hospital (late Clinical)	50	37
	Jewish Hospital	...	16
Crumpsall	Manchester Workhouse	2,767	834
*	Prestwich Workhouse	504	227
Blackley	Litchford Hall	231	5
Moston	St. Mary's Home	45	3
	St. Joseph's Home	50	...
	St. Bridget's Orphanage	27	1
Newton	Monsall Hospital	428	184
	Little Sisters of the Poor (Culcheth Hall)	165	21
Clayton	Clayton Hospital	20	19
Ardwick	Industrial School	204	...
	Nicholls Hospital	96	1
Openshaw	Crossley's "Home of Peace"	10	9
Rusholme	St. Joseph's Girls' School	176	...
	St. Mary's Home	61	...

TABLE 3 (continued).—POPULATIONS—DEATHS OF MANCHESTER RESIDENTS, 1908, IN PUBLIC INSTITUTIONS.

Township	Name of Institution	Census Population, 1901	Deaths, 1908
CHORLTON-ON-MEDLOCK	St. Joseph's Boys' School	418	1
	Royal Eye Hospital	103	1
	Little Sisters of the Poor (Plymouth Grove)	199	20
	Cancer Hospital	14	14
	Home for Young Girls	25	...
	Church Army Labour Home	20	...
	Penitentiary	42	...
	Chorlton Union Offices, All Saints'	...	...
HULME	Cavalry Barracks	489	...
	Loretto Convent	81	...
MOSS SIDE	"The Home," Whalley Road	...	1
WITHINGTON... *	Chorlton Workhouse	2,013	939
OUTSIDE CITY.	Pendlebury Hospital	180	63
	Prestwich Lunatic Asylum	2,614	57
	Salford Royal Hospital	...	13
	Bowdon Consumption Hospital	...	3
	Robinson Kay's House, Bury	...	1
	Workhouse, Salford	...	2
	County Asylum, Lancaster	...	33
	Birmingham Asylum	...	1
	Baguley Sanatorium	...	1
	Blackpool Victoria Hospital	...	1
	Styal Cottage Homes	...	2
	Oldham Infirmary	...	2
	Bolton Infirmary	...	1
	Royal Albert Asylum	...	1
	Knutsford Workhouse	...	1
	Patricroft Workhouse	...	2
	Ladywell Sanatorium	...	1
	David Lewis Epileptic Colony	..	1
	St. Ann's, Dunham Massey	...	1
	Queen Alexandra Hospital, Westminster	...	1
	TOTAL DEATHS		3,099

* Proportion only.

This proportion is somewhat less than that holding in 1907, when it was 26·5 per cent. In 1906 it was 25, in 1905 24 per cent.

There was, again, a marked increase in the number of deaths occurring in the Chorlton Union Hospital, and a slight increase in the numbers occuring in the Crumpsall and Prestwich Hospitals. The number of deaths occurring in the Royal Infirmary was, however, smaller in 1908 than in 1907 by no fewer than 50 deaths.

The chief causes of death during 1908 were as follows:—

Phthisis	1088	Premature Birth	422
Tuberculosis of Organs other than the Lungs	389	Nephritis and Bright's Disease	330
Diseases of the Heart ..	1119	Convulsions	135
Cerebral Hæmorrhage, Apoplexy, Hemiplegia	470	Inflammation of the Brain ...	110
Pneumonia	1293	Diarrhœa and Dysentery ..	591
Bronchitis	1150	Measles 366	801
Digestive Organs	575	Scarlet Fever 92	
Atrophy, Debility (chiefly in infants)	521	Whooping Cough 220	
Old Age...	261	Diphtheria 123	
		Influenza	132
		Malignant Disease	584

It will be seen that while there are fewer deaths from Lung Disease than in 1907, there is an increase in the number of deaths of infants, especially under the heading of Diarrhœa. There is also an increase in the mortality from Infectious Disease. The deaths from Cancer, which in 1907 numbered 498 in 1908 reach the high figure of 584.

The next table shows the gains in the death-rate as compared with the previous ten years:—

Gains in 1908 *per* 1,000 *persons living, as compared with the average for the* 10 *years,* 1898-1907—(See Table K).

Smallpox	0·01
Measles	0·02
Scarlet Fever	0·01
Whooping Cough	0·08
Enteric Fever	0·01
Diarrhœal Diseases	0·37
Puerperal Fever	0·01
Erysipelas	0·01
Phthisis	0·19
Tubercular Diseases (other)	0·17
Alcoholism..	0·07
Rheumatic Fever	0·04
Nervous Diseases	0·22
Heart and Blood Vessel Diseases	0·02
Bronchitis	0·13
Pneumonia..	0·13
Respiratory Diseases (other)	0·05
Digestive System	0·08
Old Age	0·03
Total	1·65

Losses in 1908.

Diphtheria..	0·01
Septic Diseases	0·03
Cancer	0·08
Premature Birth	0·03
Urinary Organs	0·08
Total	0·23
Balance of Gain from above Causes	1·42
Do. All Causes	1·91

These rates are exclusive of Moss Side and Withington.

Whereas the gain in 1907 was 2·08 per 1,000, in 1908 it was only 1·42 per 1,000. The largest gains were under the heads—Tuberculous Disease, Respiratory Diseases, Nervous Diseases, and Diarrhœa. Under Tuberculous Disease it amounted to 0·36 per 1,000, under Respiratory Diseases to 0·31, under Nervous Diseases to 0·22, and under Diarrhœa to 0·37 per 1,000.

Home and Institution Death-rates.

The following table shows the death-rates divided up into the portions occurring at home, in the Union Hospitals, and in other institutions, for each sanitary district. This table is of value as furnishing some index of the amount of poverty prevailing in different districts, and also because, if we may assume that the level of circumstances at which people have recourse to public institutions is at about the same level, the death-rate at home gives some idea of the sanitary conditions prevailing in each district.

TABLE 4.—1908.—DEATH-RATES* IN THE HOMES OF THE PEOPLE, IN WORKHOUSES, AND IN HOSPITALS FOR THE VARIOUS DIVISIONS OF THE CITY.

STATISTICAL DIVISIONS		Estimated Populations to middle of 1908	Death-rate per 1000 of persons dying in their own homes	Death-rate per 1000 of persons dying in Workhouses	Death-rate per 1000 of persons dying in Hospitals	Total death-rate per 1000	Mean death-rate 1891–1900
City of Manchester. ...		648,846	13·40	3·05	1·66	18·10	23·28 ‡‡
I.	Manchester Township..	125,197	15·42	6·54	2·75	24·72	30·04
II.	North Manchester	197,527	12·15	1·16	1·46	14·76	18·31
III.	South Manchester	326,122	13·38	2·85	1·36	17·58	22·24
I.	Ancoats	43,206	15·04	4·90	3·42	23·36	30·37
	Central	24,922	14·61	8·57	3·08	26·27	30·98
	St. George's	57,069	16·06	6·90	2·10	25·07	29·46
II.	Cheetham	42,376	9·13	1·12	1·44	11·69	14·50
	Crumpsall	9,430	10·02	1·15	0·52	11·69	15·48
	Blackley	9,830	14·52	1·00	1·30	16·83	17·95
	Harpurhey	23,318	8·78	0·89	0·97	10·64	19·01
	Moston	20,826	8·75	0·85	1·13	10·73	14·11
	Newton	39,153	15·77	1·33	1·94	19·03	19·55
	Bradford	25,355	15·80	1·79	1·94	19·53	23·36
	Beswick	12,588	15·02	1·17	1·56	17·75	20·30
	Clayton	14,651	12·36	0·67	1·28	14·31	17·18
III.	Ardwick	45,324	12·79	2·09	1·43	16·31	21·73
	Openshaw	29,040	15·53	2·24	1·32	19·09	21·67
	West Gorton	32,316	11·88	3·02	1·61	16·51	21·52
	Rusholme and Kirk. ...	27,007	14·25	1·46	1·06	16·77	16·05
	Chorlton-on-Medlock ..	55,597	13·93	4·46	1·63	20·03	21·34
	Hulme	62,629	16·24	5·01	1·79	23·05	25·42
	Moss Side.....	28,522	12·18	0·97	1·21	14·36	...
	Withington.....	45,687	9·31	0·93	0·45	10·69	...

* In this table, *every death* occurring in a Public Institution has been referred to the District from which the patient originally came.

‡ Exclusive of Moss Side and Withington.

The home death-rates, on the above assumption, follow the same order as the total death-rates, after distribution, so far as the main divisions of the City are concerned. It is otherwise with the sanitary districts. The highest home

death-rate is in Hulme, followed by St. George's, then in Ancoats; then follow in order Bradford, Newton, Openshaw, and Beswick. Yet the highest total death-rate is in the Central District. In 1907 the order was not much different, viz., Ancoats, Hulme, St. George's, Openshaw, Newton, Beswick, Bradford.

The highest Union Hospital death-rates are in Central, St. George's, Hulme, Ancoats, and Chorlton-on-Medlock. The highest institution death-rates are in Ancoats, Central, Bradford, Newton, and Hulme.

Death-rates in Age Groups.

The death-rates in different age groups for the whole City, at six groups of ages, are shown in the following table for a series of years:—

Death-rates in Age Groups, 1891–1908.

Year	All causes	Under 5 years	5–14 years	15–24 years	25–44 years	45–64 years	65 years and upwards
1891	25·97	86·6	4·80	5·65	13·93	40·4	134·2
1892	23·22	78·7	4·59	5·37	12·06	35·9	114·4
1893	24·35	86·3	4·73	4·94	12·51	35·3	121·7
1894	19·93	66·5	3·97	4·52	11·16	29·5	100·9
1895	24·68	90·7	4·67	5·19	11·92	35·9	116·0
1896	22·53	80·4	4·08	4·89	11·22	33·3	110·9
1897	22·58	85·3	3·94	4·54	10·24	32·4	109·9
1898	21·49	78·1	3·55	4·14	10·80	32·0	104·1
1899	24·22	87·5	4·22	4·86	11·80	36·4	118·6
1900	23·79	78·3	4·21	4·63	12·52	39·7	119·4
1901	21·60	74·5	4·44	4·40	10·48	34·2	106·0
1902	20·03	64·7	4·12	4·39	10·26	33·8	99·2
1903	19·45	69·5	3·71	4·05	8·99	29·7	97·5
1904	20·89	75·8	3·71	4·15	9·40	31·3	109·5
*1905	18·74	61·9	3·75	3·87	8·77	30·3	104·9
†1905	17·82	59·2	3·51	3·65	8·24	28·6	99·4
*1906	19·90	69·3	3·97	3·51	9·49	29·9	111·3
†1906	19·00	66·6	3·67	3·37	8·94	28·3	105·5
*1907	18·74	58·6	3·17	3·51	9·16	32·1	112·7
†1907	17·89	56·2	3·04	3·39	8·64	30·6	105·1
*1908	18·8	62·1	3·45	3·49	9·12	30·8	107·9
†1908	18·1	60·0	3·37	3·38	8·59	30·0	103·3

* Exclusive of Moss Side and Withington.

† Inclusive of Moss Side and Withington.

This table is of importance, as showing us at what periods of life an improvement of health or the reverse is occurring over a considerable period of years.

It also presents, for each year, a picture of the extent to which mortality affects different periods of life. Commencing with great severity in infancy, it rapidly descends to the age-group 5–14, after which there is a steady but slower ascent as age advances.

This is seen more in detail in the table showing the mortality rates in males and females, from which we see that the lowest mortality is experienced at ages 10–14 (p. 17.)

Following the course of the death-rates since 1891, we perceive that the improvement which has occurred is greatest at the ages 5–14, 15–24, and 25–44, although there is also improvement at ages under 5, and above 44.

The gain in the death-rate is, therefore, one which, in default of misdirection of the working life, should have eminently added to the wealth of the community.

If, in addition, we desire to add still further to the producing power of the community, we may do so if we can improve the health of the infants and of children under school age. As we have seen, some, but by no means a sufficient, improvement has taken place in the mortality of children under school age. It would also appear that this improvement extends to the first year of life.

This is by no means assured as yet, though we may with some confidence anticipate that the changes in the closet system, the improvements in drainage, and the steady improvement of insanitary houses, with other improvements which will follow these, will still further reduce the mortality. Until, however, we have undergone the test of two or three severe Diarrhœa seasons, it is impossible to be sure of this.

Infantile Mortality.

The figures showing the infantile mortality in successive years are as follows :—

Deaths per 1000 *births at the ages* 0–3 *months,* 3–5 *months, and* 6–11 *months, in successive years.*

Years	Months of Age			
	0–2	3–5	6–11	Under 1 year
1891–95 (mean)	82·79	40·99	62·97	186·75
1896	78·71	38·11	59·31	176·13
1897	82·31	42·43	69·89	194·63
1898	86·64	42·72	66·51	195·87
1899	88·14	46·49	70·79	205·42
1900	81·42	42·42	64·91	188·75
1901	88·90	42·96	66·60	198·46
1902	73·49	32·23	45·73	151·45
1903	79·91	36·37	52·25	168·53
1904	84·37	42·01	60·34	186·72
1905	78·42	34·05	46·28	158·75
1906	78·65	35·77	54·68	169·10
1907	73·91	30·46	43·07	147·44
1908	76·20	30·09	46·16	152·45

When the facts are presented in the following manner, it will be seen that in recent years there has been a shifting of the mortality, so that it has become relatively severe in the first three months of life.

Percentage of total infantile mortality occurring in sections of the first year of life for triennial periods from 1891 *to* 1906.

Years	Ages			
	0–3 months	3–6 months	6–12 months	Average rate of mortality
1891–93	44·9	21·6	33·5	190
1894–96	43·8	22·2	34·0	180
1897–99	43·1	22·1	34·8	199
1900–02	45·3	21·8	32·9	178
1903–05	46·7	22·1	31·2	173
1906	46·5	21·2	32·3	169
1907	50·1	20·7	29·2	147
1908	50·0	19·7	30·3	153

If we examine these figures we see that in the first three months of life the mortality per 1,000 born alive is somewhat higher than in 1907 and 1902, but below the mortality for any other year. At ages 3–5 months the mortality is decidedly lower than in 1907, or any other year, notwithstanding the increase in Diarrhœa. At ages 6–11 months the mortality is higher than in 1902 or 1907, but lower than in other years.

It has previously been stated that in years with a comparatively low Diarrhœal mortality the relative death-rate below three months of age tends to be raised in comparison with that holding for the rest of the year.

The steady rise in this figure has been used in these reports to emphasise the tendency of the mortality to fall more and more on the beginning of life. It is necessary, however, to guard against the implied fallacy that there is an absolute increase in this mortality. On the contrary, we observe that in 1902, 1907, and 1908, the mortality figure at this age is comparatively low, as it is also in the later portions of the first year of life. Nevertheless, the improvement is less at the earlier period, when there is improvement, and the retrogression greater when there is retrogression. This may, with a high degree of probability, be held to indicate that less care is bestowed on the physique of the mother than is given to the nurture of the infant.

How great has been the total improvement in the health of the City since 1891 may be seen on examination of figures corresponding to those which we have just considered, but relating to each of the three main sanitary divisions.

These figures have not the same degree of reliability as those for the whole City, but they probably represent substantially the facts. They are as follows :—

TABLE 5.—SHOWING THE REDUCTION IN THE DEATH-RATE FOR ALL AGES, AND AT SIX AGE PERIODS FOR EACH OF THE MAIN DIVISIONS OF THE CITY SINCE THE YEAR 1891.

Death-rates at all ages, and at six age periods—Manchester Township.

Year	All ages	0–4	5–14	15–24	25–44	45–64	65 +
1891	32·03	108·59	5·57	6·32	17·47	51·09	152·81
1892	29·99	101·47	6·17	6·30	15·72	47·33	143·34
1893	30·23	105·85	4·73	5·88	17·09	44·89	144·64
1894	25·27	78·24	5·34	5·25	15·28	40·04	132·04
1895	31·59	106·24	5·42	6·50	18·16	49·08	150·49
....	....	....	....	....	....	....	....
1902	25·13	76·76	4·66	4·80	14·61	44·67	102·41
1903	25·26	87·03	4·69	4·29	13·14	40·28	105·60
1904	26·75	94·11	4·59	5·24	13·15	40·11	121·50
1905	24·39	83·02	4·40	4·30	12·47	38·76	107·98
1906	26·99	95·48	4·49	4·89	13·62	38·40	131·02
1907	25·10	76·22	3·73	4·51	13·37	44·21	124·90
1908	24·72	84·03	4·10	3·49	12·96	40·13	110·73

South Manchester, exclusive of Withington and Moss Side.

Years	All ages	0–4	5–14	15–24	25–44	45–64	65 +
1891	24·43	80·68	4·62	5·50	13·23	37·34	130·06
1892	21·30	71·47	3·94	5·34	11·10	33·20	106·35
1893	23·02	81·24	4·66	4·78	11·57	32·72	121·68
1894	18·89	65·08	3·12	4·22	10·44	27·34	97·56
1895	23·02	85·78	4·09	4·76	10·32	32·61	111·91
....	....	....	....	....	....	....	....
1902	19·19	61·88	4·16	4·47	9·54	31·83	98·33
1903	19·31	72·24	3·44	4·32	8·53	27·63	99·20
1904	20·51	77·11	3·58	3·88	8·51	30·00	111·83
1905	18·62	55·41	3·43	3·40	7·56	26·65	97·84
1906	19·41	62·04	3·46	3·25	8·27	26·06	100·62
1907	18·60	60·82	3·38	3·40	8·48	30·49	112·61
1908	19·20	63·81	3·48	3·84	9·24	29·87	112·23

The figures for 1905 and 1906, except the Death-rates at all ages, refer to the extended South Manchester

North Manchester.

Years	All Ages	0–4	5–14	15–24	25–44	45–64	65 +
1891	21·62	72·23	4·24	5·16	10·94	32·16	121·13
1892	18·77	63·50	3·82	4·33	9·66	26·97	103·79
1893	19·77	68·45	4·46	4·16	9·24	29·14	107·20
1894	15·52	50·48	3·53	4·26	8·19	21·76	87·78
1895	19·53	70·62	4·12	4·50	8·32	27·38	105·84
....	....	....	....	....	....	....	....
1902	17·22	59·38	3·67	3·95	7·95	26·75	97·39
1903	15·20	53·15	3·35	3·49	6·54	23·51	87·13
1904	17·12	61·04	3·26	3·75	7·97	25·81	94·90
1905	14·89	48·79	3·04	3·64	6·53	23·96	95·41
1906	15·71	54·48	3·45	2·57	6·98	24·79	95·18
1907	14·74	44·75	2·59	3·00	7·34	25·07	102·95
1908	14·76	46·85	3·01	3·07	6·55	26·64	102·94

Not only is a great and continuous progress manifest for each of the three divisions, including the Manchester Township, into which is collected the common lodging-houses, and much of the oldest property, as well as of the poorest people, but on a comparison of the figures for the Manchester Township in 1907 and 1908 with those for the whole City in 1891, it will be seen that, as regards the liability to death at different ages, this, the worst part of Manchester, stands better than did the whole of Manchester in 1891.

This is no mean history of achievement, though it is to be hoped that it is but the beginning of still greater advance.

No doubt it is difficult to determine how much of the improvement manifested is due to sanitary works, how much to social and economic changes. Both have contributed. But there is still so much room for sanitary and social betterment that the outlook is very hopeful.

The following table shows the death-rate at all ages, and in twelve groups of ages, for males and females. These figures serve to illustrate the manner in which the death-rate descends from birth to the ages 10–14, and then gradually ascends.

TABLE 6.—ANNUAL RATES OF MORTALITY IN MANCHESTER IN THE YEAR 1908 AT TWELVE GROUPS OF AGES AMONGST PERSONS—MALES AND FEMALES.

GROUPS OF AGES	PERSONS			MALES			FEMALES		
	Estimated Population	Deaths	Death-rates	Estimated Population	Deaths	Death-rates	Estimated Population	Deaths	Death-rates
All Ages	648,846	11,930	18·10	311,145	6,281	19·87	337,701	5,649	16·47
0 —	73,977	4,509	60·01	36,852	2,485	66·39	37,125	2,024	53·67
5 —	66,943	280	4·15	32,971	140	4·18	33,394	140	4·13
10 —	66,365	166	2·56	32,028	71	2·18	31,915	95	2·93
15 —	64,947	199	3·02	31,150	107	3·38	33,797	92	2·68
20 —	69,445	263	3·73	32,100	138	4·23	37,345	125	3·30
25 —	115,372	645	5·50	54,707	343	6·17	60,665	302	4·90
35 —	82,975	1,086	12·89	40,120	606	14·87	42,855	480	11·03
45 —	57,645	1,244	21·25	27,585	695	24·80	30,060	549	17·98
55 —	34,453	1,468	41·95	15,676	792	49·74	18,777	676	35·44
65 —	15,270	1,296	83·56	6,340	610	94·72	8,930	686	75·63
75 —	4,119	666	159·18	1,511	263	171·36	2,608	403	152·13
85 +	335	108	317·39	105	31	290·66	230	77	329·59

The relation of sex to mortality is also shown in *Table 4, which gives the death-rates at all ages and at 12 different age periods for each sex and for both sexes :—*

The death-rate at all ages in males exceeds the death-rate in females by 3 per 1,000. This difference is probably due, in large measure, to the circumstances that a considerable section of the males live in common lodging-houses, or under circumstances not very widely different, that men drink much more than women, that they bear more of the stress of occupations, and are exposed far more to the injuries incidental to these. The male organisation is also more liable to be overthrown than the female in the earlier years of life. In 1908, at every age except 10–14, the death-rate in males exceeds that in females, generally by a large amount.

Vital Statistics for the Different Sanitary Districts of the City.

Each of the main divisions of the City is sub-divided into sanitary districts, the Manchester Township containing 3, North Manchester 9, and South Manchester 8, inclusive of Moss Side and Withington.

The figures relating to individual sanitary districts cannot be received with confidence at this distance from the Census. Still, the main outlines may be accepted. The highest birth-rates occur in the Manchester Township, over a large industrial area in North and South Manchester, and in Hulme.

The individual districts composing the above industrial area are Ancoats, St. George's, Hulme, Newton, Bradford, Beswick, Openshaw, and Rusholme (Table G, Appendix).

The illegitimate births bear the highest percentage to total births in Chorlton-on-Medlock, Hulme, Moss Side, Rusholme, Central, St. George's, and Crumpsall. Thus, the illegitimate birth-rate is comparatively high over a considerable area of South Manchester, and bears no relation to the total birth-rate.

Over 90 per cent. of the deaths are certified by Medical Practitioners in every district except the Central, the next lowest proportion being in Ancoats and Cheetham, and the highest in Moss Side and Crumpsall. In Crumpsall, Clayton, Ardwick, Moss Side, and Withington, all deaths are either certified by medical Practitioners or by the Coroner (see Table L, Appendix).

The highest proportion of inquests was in the Central District, then in Cheetham, Chorlton-on-Medlock, Ardwick, and Ancoats. The highest proportion of uncertified deaths was in Blackley, then in Central, Harpurhey, and Ancoats. It is lower by one-third than it was in 1907, but it is still far too high, viz., 0·6 per cent. of all deaths.

The natural rate of increase, or excess of the birth-rate over the death-rate, was 10·79 per 1,000, which is considerably more than is required to sustain the calculated increase of the population.

The highest natural rates of increase were in Rusholme, Cheetham, Beswick, Moston, Bradford, Openshaw, and West Gorton. The lowest was in Chorlton-upon-Medlock, while in the Central District the deaths exceeded the births (Table G, Appendix).

We have already studied the calculated death-rates in the sanitary districts, and in the last Annual Report those for 1907 were compared with the mean death-rates for the ten years 1891–1900. Many striking changes are thus manifest. The most conspicuous improvements in the death-rate in 1908 are :—

	1908	1891-1900		1908	1891-1900
Ancoats	23·36	30·25	Ardwick	16·31	21·78
Harpurhey	10·64	19·20	West Gorton ..	16·51	21·56

The complete figures are as follows :—

	1908.	1891–1900.
Ancoats	23·36	30·25
Central	26·27	31·01
St. George's	25·07	29·52
Cheetham	11·69	14·61
Crumpsall	11·69	15·19
Blackley	16·83	18·10
Harpurhey	10·64	19·20
Moston	10·73	14·27
Newton Heath	19·03	19·61
Bradford	19·53	23·50
Beswick	17·75	20·29
Clayton	14·31	17·24
Ardwick	16·31	21·78
Openshaw	19·09	21·69
West Gorton	16·51	21·56
Rusholme and Kirk.	16·77	16·13
Chorlton-upon-Medlock	20·03	21·38
Hulme	23·05	25·48
Moss Side	14·36	—
Withington	10·69	—

From Table H in the Appendix, we obtain the deaths under one year of age per 1,000 births in the year 1908 for each of the Sanitary Districts. This figure has the advantage of being independent of the population, and is of great interest, besides, in connection with the work of the Infant Life Protection Sub-Committee. If we compare the figures for 1908 with those for the ten years 1894 to 1903, we see that there is a great reduction in the mortality in Ancoats, St. George's, Crumpsall, Harpurhey, Moston, Bradford,

Clayton, Ardwick, Openshaw, West Gorton, Rusholme, and Hulme. The infant mortality no doubt, fluctuates from year to year, but reductions so great as those in West Gorton and Clayton appear to mark a decided advance.

Causes of Death.

The death-rates at all ages from various causes of death, for the whole City, will be found classified and compared with the death-rates from the same causes in previous years in Tables E, F, and K of the Appendix.

From Table F we perceive that the death-rate from (Tubercular) Phthisis was, in 1908, 1·74 per 1,000, thus showing a reduction on the death-rate from that malady in 1907, and being the lowest death-rate from this cause yet reached, except in 1905. It is to be feared that the prevailing distress, and the great prevalence of Zymotic Diseases, will cause an increase for some years after the present. As it is, the advance made has not been nearly so great as that which has taken place in the death-rate from all causes at the corresponding ages. In other forms of Tubercular Disease the improvement has been much greater, although the death-rate is not quite so low as in 1907. From Diseases of the Nervous System the death-rate is the lowest yet recorded.

From Diseases of the Circulation, the death-rate is practically stationary, being thus in marked contrast with that assigned to other causes of death. If, however, we refer to Table M, we see that this is the most fatal condition in persons above 45 years of age, and more especially at ages 65 and upwards. Now, it is at this age that least improvement in the death-rate has taken place. It is, indeed, somewhat doubtful whether we can look for much improvement in old people. Part of the Cardiac mortality is due, however, to Rheumatic Fever. Has this affection increased or remained stationary? From Table K it would appear not, the death-rate in 1908 being 0·04 as compared with 0·07 in the ten years 1898–1907.

From diseases of the Respiratory System other than Phthisis the death-rate in 1908 was fairly high, though lower than the average for any quinquennial period since 1881.

From diseases of the Digestive System the death-rate was also below the average. From Urinary Diseases it was comparatively high. From diseases of the Generative System it was somewhat lower than the average rate.

Both from Puerperal Fever, and under deaths in child-birth, the death-rate was higher than in 1907, though lower than in any previous quinquennium.

From Table E (Appendix) we find that the death-rates from Measles and Diphtheria were comparatively high. Scarlet Fever and Enteric Fever continue to exhibit a low death-rate. Both from Diarrhœa and Whooping Cough the death-rates, though not low, are below the average.

By Table K (Appendix) we are enabled to pursue the classification of the causes of death into more detail. We perceive that Pneumonia, the Manchester plague, is less fatal in 1908 than on the average of the previous ten years. This is also true of Bronchitis, which is a form of lung trouble affecting especially more advanced ages. The chief value of this table, however, is in the comparison which it affords between the three main divisions of the City, retaining the old boundaries of the divisions.

Table M (Appendix) enables us to form a summarised conception of the manner in which the various classes of disease behave towards different ages. The infectious diseases, with the exception of Enteric Fever, which is pre-eminently a disease of young adult life, are fatal in infancy and childhood.

Tuberculous Disease appears to exact a high mortality in infancy, and to reach its lowest point at the age-period 5 to 10, after which it continues to ascend, for the whole community of Manchester, at all events, reaching its highest point between the ages of 45 and 55, after which it descends.

It is probable that the maximum point varies, being earliest in the community least exposed to Phthisis. The maximum is reached in women at the age-period 35 to 45, in men at the age-period 45 to 55.

Malignant Disease, Diseases of the Nervous System, Respiratory Diseases other than Phthisis, Diseases of the Circulatory System, Diseases of the Digestive System, and Diseases of the Urinary Organs are most fatal at the most advanced ages. Diseases of the Respiratory Organs and Diseases of the Digestion are, however, fatal also at the beginning of life. The most fatal causes of death are Tuberculosis, Pneumonia, Bronchitis, Heart Disease, and Carcinoma

Table D (Appendix) furnishes an analysis of the causes of death of children under one year of age, divided into ages, under 3 months, 3–6 months, and 6–12 months, also for each year under 5 years of age.

Table J (Appendix) permits a summary review of the death-rates under one year of age per 1,000 born, from various causes, in the three main divisions of the City.

It is unnecessary to detail the course of the diseases shown in Table D, which does not depart materially from that usually followed, and which may be readily gathered from the table.

Table J also presents the usual features. Measles is most fatal in the Manchester Township, and next in South Manchester. This course is also followed by the mortality from Diarrhœa, from Tubercular Disease, and under the terms Suffocation and Found Dead in Bed. Lung Diseases are most fatal to infants in the Manchester Township, then in North Manchester. Such is also the case with common infectious diseases (other than Measles, Whooping Cough, and Diarrhœa), with Premature Births, with Atrophy, etc.

The mortality in infants from Whooping Cough and Convulsions is highest in South Manchester, other Nervous Diseases in North Manchester, least in the Manchester Township.

The chief causes of death in the first three months of life are Diarrhœa, Lung Disease, Prematurity, and Atrophy, etc.; in the second three months, Diarrhœa, Lung Diseases, and Atrophy; in the second half-year, Diarrhœa, Lung Disease, Measles, Whooping Cough, and Atrophy.

Table N (Appendix) allows of a comparison at six groups of ages of the death-rates, from classified causes of death, in the three main statistical divisions of the City. The inaccuracy of these tables must now be so great that they will be discontinued for the next two years at least. Yet the indications which they give do not differ materially from those presented by the same tables near the Census.

I would call attention only to the manner in which Tuberculous Disease continues to increase at ages 45 to 65 in the Manchester Township, at which ages it shows a diminution in South and North Manchester. Heart Disease, on the other hand, at advanced ages, is more fatal in these divisions.

Respiratory Diseases, other than Phthisis, behave in a similar manner to Phthisis, though the disproportion is not so great.

It is, therefore, on the lungs that the gathering fatality in the central part of Manchester expends itself with the advance of years, a circumstance which deserves study, but may not be easy to explain.

INFECTIOUS DISEASES.

The diseases included in the Infectious Disease (Notification) Acts, 1889 and 1899, are as llows : Smallpox, Scarlet Fever, Diphtheria, Membranous Croup, Typhus Fever, Enteric or yphoid Fever, Relapsing Fever, Continued Fever, Puerperal Fever, Erysipelas, and Asiatic holera. The following cases were notified in 1908 and in the ten previous years, and ie year 1908 is compared with the average of the previous ten years :—

	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907	Aver'ge for 10 Years	1908
Smallpox	...	2	3	1	27	422	134	6	5	5	61	...
Scarlet Fever ...	897	1,467	2,507	2,692	2,282	2,012	2,063	1,975	3,075	2,732	2,170	2,893
Diphtheria..... Memb. Croup	196	248	337	457	422	620	474	530	551	499	434	546
Typhus Fever ...	...	3	5	39	...	...	...	...	...	1	5	...
Enteric Fever ...	642	381	378	359	378	387	325	345	384	265	384	393
Relapsing Fever	...	...	...	...	...	...	...	...	1	...	...	...
Puerperal Fever	44	35	49	55	47	30	42	82	106	95	59	101
Erysipelas	...	...	177	318	253	291	266	351	383	337	†297	364
	1,779	2,136	3,456	3,921	3,409	3,762	3,304	3,289	4,505	3,934	3,410	4,297

† Average 8 years.

The number of cases of Scarlet Fever notified in 1908 was greater than in any recent year xcept 1906. The season was cool, or the number would probably have been greater. nder Diphtheria, Enteric Fever, Puerperal Fever, Erysipelas, and Scarlet Fever, there as an increase of the numbers notified. There is a general correspondence between the umbers for Puerperal Fever and Erysipelas and those for Scarlet Fever. In recent ears more cases of Puerperal Fever have been notified than was formerly the case. t is not easy to say why there has been a general increase in the numbers notified of many infectious diseases. These numbers depend partly on epidemic laws not well nderstood. Partly also they depend on the efficient work of the Sanitary Staff and on ie provision for isolation. Probably the efficiency of the Staff is the more important ctor of the two. By efficiency is meant knowledge and activity on the part of nspectors, as well as the time needful for special inquiries.

The number of deaths for eleven years from the more common diseases is shown in ie following table, 1908 being compared with the average of the previous ten years :—

From	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907	Aver'ge for 10 Years	1908
Measles	271	699	254	292	242	345	425	231	475	229	346	366
Scarlet Fever ...	65	46	105	127	146	97	85	78	108	102	96	92
Diphtheria..... Memb. Croup	51	85	101	133	123	136	99	127	119	106	108	123
Enteric Fever ...	120	73	75	75	66	93	66	55	83	37	74	75
Smallpox	...	...	...	...	...	24	9	...	...	...	3	...
Influenza	64	219	239	99	80	62	97	95	90	111	116	132
Whooping Cough	170	227	371	224	242	213	280	195	193	314	243	220
	741	1,349	1,145	950	899	970	1,061	781	1,068	899	986	1,008

SMALLPOX.

There were no cases of Smallpox notified during 1908.

SCARLET FEVER.

The outbreak of Scarlet Fever through which we are now passing has assumed considerable dimensions, and it is evident that the type of the disease is undergoing some change. This disease has two waves—an annual, with the highest point in October, and the lowest about March, and a larger wave whose duration is not quite constant. Nevertheless, the duration of each of the two complete waves of which we have record, viz., from 1891 to 1898, and from 1898 to 1905, has been exactly seven years. The highest point of the first wave lasted three years, beginning in the fourth year after the trough. The highest point of the second wave was also reached in the fourth year after the trough in 1898.

The present year is the fourth from the last trough in 1905, and there is therefore good reason to hope that the disease will not continue to increase. There is, however, this disconcerting feature about the present wave, that so far as numbers are concerned it has been higher from the commencement than previous ones. If, however, a glance be directed to the number of deaths recorded above it will be seen that there has not been a corresponding increase in these, and that there was actually in 1908 a diminished number of deaths with an ascending epidemic. The type of the disease has, in fact, become much milder.

So great has been the change that it is frequently very difficult to diagnose attacks, and there has been reason to believe that a large number have altogether escaped observation. It is in this manner that the most strenuous efforts to control the spread of disease are liable to be baffled. If, however, we could completely weed out all the most severe cases by isolation, either in hospital or at home, we might so attenuate the severity of the disease as to rob it of its worst features. That is to some extent what is happening. Still, we are not resting on a secure foundation, since it is matter of experience that Scarlet Fever is liable to revert suddenly to a more severe type.

SCARLET FEVER.

By Dr, T. Carnwath.

I beg to submit the following particulars regarding Scarlet Fever in the City of Manchester during the year 1908.

The total number of cases notified was 2,893. Table 1, which gives the attacks in weeks, shows that the disease was, as is usual, most prevalent in the fourth quarter.

The curve of incidence rose rapidly in the 36th week, and remained high during the remainder of the year.

Table 1.—Scarlet Fever, 1908.—Attacks in Weeks according to Date of Rash.

First Quarter		Second Quarter		Third Quarter		Fourth Quarter	
Jan. 4	44	April 4	37	July 4	35	Oct. 3	104
,, 11	48	,, 11	55	,, 11	57	,, 10	64
,, 18	46	,, 18	36	,, 18	48	,, 17	54
,, 25	50	,, 25	36	,, 25	63	,, 24	56
Feb. 1	39	May 2	39	Aug. 1	40	,, 31	90
,, 8	39	,, 9	50	,, 8	34	Nov. 7	77
,, 15	27	,, 16	59	,, 15	51	,, 14	75
,, 22	41	,, 23	55	,, 22	47	,, 21	98
,, 29	33	,, 30	48	,, 29	54	,, 28	68
March 7	38	June 6	47	Sept. 5	88	Dec. 5	58
,, 14	34	,, 13	45	,, 12	68	,, 12	63
,, 21	51	,, 20	50	,, 19	83	,, 19	72
,, 28	30	,, 27	60	,, 26	87	,, 26	55
						Jan. 2/09.	67
Total...	520	Total...	617	Total...	755	Total...	1,001

City Total, 2,893.

Table 2 shows the attack-rate per 1,000 living, as compared with the rates in each of the previous five years.

The figure for 1908 is still above the average for the five years, and is also higher than that for the 12 notification towns selected.

Table 2.—Scarlet Fever Attacks, 1908.—Rates per 1,000 living, as compared with the Mean for Five Years.

	1903	1904	1905	1906	1907	Mean	1908
Twelve Towns *	4·34	3·93	4·61	4·54	3·50	**4·18**	3·58
City of Manchester	3·63	3·69	3·35	5·17	4·25	**4·02**	4·39
Manchester Township	3·18	2·89	2·74	5·75	3·99	**3·71**	4·63
North Manchester	4·27	4·49	3·46	6·69	5·06	**4·79**	4·91
South Manchester	3·43	3·55	3·55	3·89	3·86	**3·66**	3·98

* These are Blackburn, Bolton, Bradford, Burnley, Halifax, Hull, Leeds, Liverpool, Oldham, Preston, Salford, and Sheffield.

The following table shows the numbers of attacks per 10,000 living during the last 20 years:—

Year	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898
	35	51	48	50	58	43	39	44	33	16
Year	1899	1900	1901	1902	1903	1904	1905	1906	1907	1908
	27	46	49	42	36	37	34	52	43	44

Dividing this period into two, and comparing the waves of incidence in each section, there are some points of similarity disclosed. In both the crest of the wave is broken—that of the first period into three peaks, 1890, 1893, and 1896, while that of the latter appears to be following the same course. Already two peaks are evident—1901 and 1906—and it would seem that the third is now in process of formation.

The distribution of the disease is shown in the following table:—

TABLE 3.—1908—SCARLET FEVER ATTACKS IN DISTRICTS, WITH ATTACK RATE, CASE FATALITY PER CENT., AND REMOVALS TO HOSPITAL PER CENT.

DISTRICTS	ATTACKS	ATTACK RATE PER 1,000 LIVING	CASE FATALITY PER CENT.	REMOVALS TO HOSPITAL PER CENT.
Ancoats	172	3·92	2·9	83·7
Central	105	4·15	5·7	72·5
St. George's	312	5·38	3·2	66·7
Cheetham	256	5·95	2·4	75·0
Crumpsall	41	4·28	12·2	78·1
Blackley	55	5·51	1·8	56·3
Harpurhey	119	5·02	2·5	58·1
Moston	121	5·72	2·5	60·4
Newton Heath	222	5·58	5·9	64·4
Bradford	78	3·03	1·3	70·5
Beswick	38	2·97	5·3	71·1
Clayton	55	3·70	5·5	81·8
Ardwick	227	4·93	4·0	77·5
Openshaw	113	3·83	4·4	64·7
Gorton (West)	167	5·09	3·6	71·8
Rusholme and Kirk	188	6·85	2·7	60·1
Chorlton-on-Medlock	283	5·01	4·6	68·9
Hulme	178	2·80	3·4	70·8
Moss Side	163	5·63	1·8	57·1
City of Manchester	**2,893**	**4·39**	**3·6**	**68·8**

Hulme, Beswick, and Bradford appear to have suffered least. The attack-rate is highest in Rusholme and Kirkmanshulme, and the case fatality in Crumpsall, Newton Heath, Central, and Clayton.

The case-fatality rate per cent. remains the same as in 1907, and is considerably below the average for the past five years.

Year	1901	1902	1903	1904	1905	1906	1907	1908
Case fatality per cent.....	4·6	6·2	4·7	4·1	3·5	3·6	3·6	3·6

Table 4 gives the age distribution of 30,413 cases of Scarlet Fever, and shows the case fatality per cent. at different ages.

In 1908 the case fatality was greatest in the second year of life. When estimations are based on large numbers of cases, however, it is always found that the disease is most fatal in the first year, and diminishes rapidly up till puberty, after which an attack of Scarlet Fever appears to be attended with increasing risk.

TABLE 4.

SCARLET FEVER.—NUMBER OF ATTACKS, AND OF DEATHS; ALSO THE CASE FATALITY PER CENT. AT DIFFERENT AGES, FOR THE FOURTEEN YEARS 1894–1907, AND FOR 1908.

AGES	1894-1907			1908		
	ATTACKS	DEATHS	CASE FATALITY PER CENT.	ATTACKS	DEATHS	CASE FATALITY PER CENT.
Under one year ...	333	71	21·3	26	3	11·5
1 to 2 years ...	1,043	164	15·7	82	17	20·7
2 to 3 ,, ...	2,064	259	12·6	174	14	8·0
3 to 4 ,, ...	2,784	280	10·1	262	22	8·4
4 to 5 ,, ...	3,160	244	7·7	298	10	3·3
5 to 6 ,, ...	3,205	128	4·0	349	12	3·4
6 to 7 ,, ...	2,969	104	3·5	281	6	2·1
7 to 8 ,, ...	2,619	66	2·5	223	2	0·9
8 to 9 ,, ...	2,184	44	2·0	205	4	2·0
9 to 10 ,, ...	1,847	35	1·9	150	1	0·7
10 to 15 ,, ...	5,206	77	1·5	514	6	1·2
15 to 20 ,, ...	1,534	37	2·4	161	1	0·6
20 to 25 ,, ..	685	11	1·6	64	2	3·1
25 to 35 ,, ...	587	18	3·1	75	3	4·0
35 to 45 ,, ...	149	4	2·7	21	2	9·5
45 to 55 ,, ...	38	2	5·3	5	...	...
55 to 65 ,, ...	6	...	...	3	...	...
Over 65 ,, ...	...	...	...	...	...	...
All Ages	30,413	1,544	5·1	2,893	105	3·6

In the following table are given the actual death-rates from Scarlet Fever in 1908. The highest was that of Manchester Township. That for the City, though lower than in 1907, still equalled the mean for the previous five years.

For comparison, the corresponding rates for England and Wales, London and other towns, are also given.

TABLE 5.—SCARLET FEVER MORTALITY, 1908.—RATE PER 1,000 LIVING, COMPARED WITH MEAN OF FIVE YEARS.

	1903	1904	1905	1906	1907	Mean	1908
England and Wales	0·12	0·11	0·11	0·10	0·09	**0·11**	0·08
76 Great Towns	0·14	0·12	0·13	0·12	0·12	**0·13**	0·10
London	0·08	0·08	0·12	0·11	0·14	**0·11**	0·11
Manchester City	0·17	0·15	0·13†	0·19†	0·18†	**0·16†**	0·16†
Manchester Township	0·14	0·17	0·15	0·27	0·20	**0·19**	0·18
North Manchester	0·21	0·16	0·10	0·20	0·22	**0·18**	0·14
South Manchester	0·17	0·14	0·15†	0·14†	0·14†	**0·15†**	0·16†
142 Smaller Towns	0·12	0.13	0·11	0·09	0·08	**0·11**	0·07
Rural Districts	0·10	0·09	0·09	0·08	0·06	**0·08**	0·05

† Exclusive of Moss Side and Withington.

The following table gives the percentage of cases removed to Hospital in each year since 1898:—

TABLE 6.—SCARLET FEVER.

		1893	1894	1895	1896	1897	1898	1899	1900
Manchester Township.	Removal to Hospital, per cent.	76·3	79·1	82·0	83·5	89·2	85·8	87·2	88·0
	Death-rate per 1,000...	0·23	0·26	0·37	0·41	0·27	0·11	0·08	0·16
Entire City.	Removal to Hospital, per cent.	58·6	66·0	71·3	73·9	79·7	73·1	74·4	80·9
	Death-rate per 1,000...	0·27	0·22	0·33	0·37	0·23	0·12	0·08	0·19

		1901	1902	1903	1904	1905	1906	1907	1908
Manchester Township.	Removal to Hospital, per cent.	88·5	88·8	91·9	88·6	82·3	75·1	74·5	72·7
	Death-rate per 1,000...	0·24	0·21	0·14	0·17	0·15	0·27	0·20	0·18
Entire City.	Removal to Hospital, per cent.	82·3	81·2	83·4	79·8	72·9	66·3	65·0	68·8
	Death-rate per 1,000...	0·23	0·27	0·17	0·15	0·13	0·19	0·18	0·16

As in previous years, attention has been paid to the question of return cases.

Enquiry was made into 106 possible cases. Of these, 50 showed some definite sign of lesion—nasal discharge (30), otorrhœa (10), desquamation (10)—at the time of investigation. 56 of the discharged cases presented no special features, and it would have been practically impossible to say from examination whether or not they were infectious.

The following table shows the interval in days between the return home of the primary case and the rash of the subsequent case for the five years 1904 to 1908, except that in the case of 1906 the interval is reckoned to the day of onset in the subsequent case. Instances are included in these figures where more than one return case is attributed to one and the same original case :—

Table 7.

Days	-7	-14	-21	-31	-41	-51	-61	-71	-81	Total
1904	47	38	23	13	11	6	..	..	..	138
1905	17	24	11	13	1	4	2	3	1	76
1906	44	49	16	9	9	6	2	2	..	137
1907	26	28	16	7	5	..	..	..	..	82
1908	27	36	22	14	8	3	..	1	..	111

These figures might appear to lend support to the view recently expressed by some American and German writers that the incubation period of Scarlet Fever is really much longer than that generally accepted in this country. One writer gives 10–14 days as the average period, with limits of 4 to 20 days.

But certain sources of fallacy are evident on consideration. Suppose the return case to have been in contact with the original for 14 days it is impossible to say whether infection took place on the first or on the fourteenth day; in other words, whether the incubation period was 14 days or only one. Again, it is possible for a child, after exposure to infection, to harbour the virus for a considerable time, and yet actual infection or invasion of the tissues take place only after, and if the resistance is lowered from some other cause.

In connection with return cases, another possibility is that at the time of discharge from hospital the original case is not in an actively infectious condition. This may be determined only after return home by onset of otorrhœa, rhinitis, etc.

The same difficulties present themselves in estimating the incubation period of any infectious disease, so much depends on the virulence of the infecting agent and the resistance of the individual.

There is little hope of settling questions of this nature finally until something more definite is known as to the causative agent. It is now generally agreed, I think, that the streptococcus described by Kurtl and Gordon is not the specific germ of the disease, though it is no doubt responsible for some of its signs and many of its complications and sequelae.

Mallory and Duval have recently described protozoal-like bodies which they found in and between the deeper cells of the epidermis, and to which they attach etiological significance. Von Prowazek shares their view, but doubts whether these bodies are really protozoa, and are not rather the result of the growth in the cell of a smaller germ belonging to the same group (Chlamydozoa) as that which he has already figured and described as the specific organism in Trachoma.

If the event should prove that this organism is the cause of Scarlatina it would explain the tenacious character of the infection, and an affirmative answer would finally be given to the question as to the infectivity of desquamating skin.

DIPHTHERIA AND MEMBRANOUS CROUP.

By Dr. T. Carnwath.

I beg to submit the following particulars regarding Diphtheria and Membranous Croup in Manchester during the year 1908.

The following table shows the number of cases notified each year for the last 11 years :—

1898	1899	1900	1901	1902	1903	1904	1905	1906	1907	1908
196	248	337	457	422	620	474	530	551	499	546

As in the case of Scarlet Fever, there was a slight increase in the total number of cases as compared with the previous year. Nevertheless, as is seen from Table II., the rate of incidence remains considerably lower than that for the 12 notification towns specified, and the attack-rate is also lower than the mean for the previous five years.

The disease was most prevalent in the 4th quarter of the year, as seen in Table I.

Table I.

Diphtheria, Memb. Croup, 1908.—Attacks in Weeks, according to date of onset.

First Quarter		Second Quarter		Third Quarter		Fourth Quarter	
Jan. 4	12	April 4	9	July 4	3	Oct. 3	9
,, 11	12	,, 11	6	,, 11	8	,, 10	14
,, 18	18	,, 18	12	,, 18	6	,, 17	7
,, 25	17	,, 25	7	,, 25	11	,, 24	11
Feb. 1	9	May 2	9	Aug. 1	9	,, 31	15
,, 8	6	,, 9	9	,, 8	8	Nov. 7	18
,, 15	5	,, 16	10	,, 15	5	,, 14	13
,, 22	9	,, 23	11	,, 22	5	,, 21	15
,, 29	8	,, 30	9	,, 29	14	,, 28	23
March 7	7	June 6	6	Sept. 5	9	Dec. 5	16
,, 14	14	,, 13	7	,, 12	11	,, 12	19
,, 21	12	,, 20	5	,, 19	7	,, 19	17
,, 28	7	,, 27	6	,, 26	6	,, 26	11
						Jan. 2, 1909	14
Total...	136	Total...	106	Total...	102	Total...	202

City total, 546.

Table II.

Shows the Attack Rate per 1000 living for the year 1908, compared with the mean of five years—Diphtheria and Membranous Croup.

	1903	1904	1905	1906	1907	Mean	1908
*Twelve Notification Towns ...	1·20	1·35	1·25	1·71	1·19	**1·34**	1·25
City of Manchester	1·12	0·85	0·90	0·93	0·78	**0·92**	0·83
Manchester Township.....	0·54	0·59	0·90	0·79	0·69	**0·70**	0·88
North Manchester	1·32	0·95	0·89	1·20	1·12	**1·10**	0·83
South Manchester	1·28	0·91	0·90	0·81	0·60	**0·90**	0·81

* These are in Lancashire and Yorkshire.

Though from Table III. it appears that Diphtheria continues to be highly fatal in the first year of life, a noteworthy diminution is observed of the case fatality at subsequent age periods, pointing possibly to greater success in bringing to light mild and formerly unrecognised cases, or more probably to a change in the type of the disease.

The largest number of cases occurred at the ages 1–2, 3–4, and 4–5. Enquiry elicits the fact, however, that many of those occurring in the early years are secondary cases, and that if one has regard only to primary cases, the greatest numbers are found to have occurred at the age 4–5 and 5–6.

Table III

Diphtheria, Memb. Croup, 1908.—Number of Attacks, of Deaths, and Case Fatality at Different Ages, for the Fourteen Years 1894-1907, and for 1908.

Ages	1894-1907			1908		
	Attacks	Deaths	Case Fatality*	Attacks	Deaths	Case Fatality*
Under one year ...	169	111	65·7	16	11	68·7
1 to 2 years ...	456	249	54·6	72	32	44·4
2 to 3 „ ...	503	221	43·9	53	14	26·4
3 to 4 „ ...	657	226	34·4	72	12	16·7
4 to 5 „ ...	630	178	28·2	77	15	19·5
5 to 6 „ ...	557	155	27·8	67	13	19·4
6 to 7 „ ...	378	84	22·2	41	7	17·1
7 to 8 „ ...	307	58	18·9	27	2	7·4
8 to 9 „ ...	264	50	18·9	22	5	22·7
9 to 10 „ ...	205	30	14·6	17	1	5·9
10 to 15 „ ...	558	37	6·6	39	4	10·3
15 to 20 „ ...	257	14	5·4	11	1	9·1
20 to 25 „ ...	220	5	2·3	11	1	9·1
25 to 35 „ ...	305	13	4·3	18	...	...
35 to 45 „ ...	111	4	3·6	3	...	33·3
45 to 55 „ ...	42	4	9·5	...	...	...
55 to 65 „ ...	12	1	8·3	...	...	...
Over 65 „ ...	6	...	...	...	...	...
All ages	5637	1440	25·5	546	119	21·8

* The percentages in this column are the actual proportions of fatal cases to the attacks at those ages.

The case fatality rate for all ages in each of the years 1898 to 1908 is given below:—

1898	1899	1900	1901	1902	1903	1904	1905	1906	1907	1908
—	—	—	—	—	—	—	—	—	—	—
28·5	33·9	29·0	28·8	29·4	21·9	20·7	22·4	21·1	20·4	21·8

Though showing a decrease as compared with the average for the previous 14 years, the case fatality is still high. This must, I think, be attributed in considerable measure to delay in the use of Diphtheria Antitoxin. Instead of relying more on clinical appearances, medical men are too apt to wait until

they hear the result of the bacteriological examination, and thus precious moments are lost. With the facilities that are now provided for obtaining antitoxin at the various police stations throughout the City, little time should be lost in applying the remedy. In doubtful cases it is well to take the more serious view and use antitoxin at once. In this way it is certain that a still further reduction in the mortality might be effected.

It may be well here to note the importance of cases of Nasal Diphtheria in the spread of the disease, and the frequency with which such are overlooked, or mistaken for cases of "simple cold."

With regard to the injection of antitoxin as a preventive of Diphtheria, it is sufficient to say that its value in this respect has not been demonstrated. A priori one would not expect much benefit from its use for this purpose.

Table IV.

Diphtheria and Membranous Croup, 1908.—Attacks in Districts, with Attack Rate, Case Fatality per cent., and Removals to Hospital per cent.

Districts		Attacks	Attack Rate per 1000 living	† Case Fatality per cent.	Removals to Hospital per cent.
Manchester Township	Ancoats	28	0·64	32·1	67·8
	Central	33	1·30	15·2	69·7
	St. George's	51	0·88	27·4	56·8
North Manchester	Cheetham	39	0·91	15·4	53·8
	Crumpsall	12	1·25	16·7	41·7
	Blackley	7	0·70	...	28·6
	Harpurhey	27	1·14	22·2	29·6
	Moston	18	0·85	16·7	33·3
	Newton Heath	27	0·68	18·5	55·5
	Bradford	16	0·62	50·0	62·5
	Beswick	9	0·70	22·2	77·8
	Clayton	11	0·74	18·2	45·5
South Manchester	Ardwick	50	1·09	18·0	58·0
	Openshaw	33	1·12	36·3	27·3
	Gorton (West)	16	0·49	31·3	62·5
	Rusholme and Kirk.	40	1·46	12·5	32·5
	Chorlton-on-Medlock	31	0·55	16·1	48·3
	Hulme	74	1·16	24·3	55·4
	Moss Side	24	0·83	16·7	20·8
City of Manchester...		**546**	**0·83**	**21·8**	**49·8**

† Corrected: the fatal cases are those actually occurring amongst the cases notified.

From this table it appears that the districts which suffered most were Central, Crumpsall, Harpurhey, Ardwick, Openshaw, Rusholme, and Hulme. With the exception of Openshaw and Hulme, all of these had a comparatively low case fatality. On the other hand, in most of the districts where the attack-rate was low a high case mortality obtained.

Table V.

Diphtheria, Memb. Croup Mortality, 1908.—Rate per 1000 living compared with mean of five years.

	1903	1904	1905	1906	1907	Mean	1908
England and Wales	0·18	0·17	0·16	0·17	0·16	**0·17**	0·15
76 Great Towns	0·20	0·19	0·16	0·19	0·17	**0·18**	0·16
London	0·16	0·16	0·12	0·15	0·16	**0·15**	0·15
Manchester City	0·25	0·18	*0·22	*0·20	*0·18	*0·21	*0·20
Manchester Township	0·16	0·13	0·25	0·21	0·21	**0·19**	0·23
North Manchester.....	0·26	0·22	0·19	0·22	0·19	**0·22**	0·16
South Manchester.....	0·28	0·17	*0·22	*0·18	*0·16	*0·20	*0·21
142 Smaller Towns	0·16	0·16	0·15	0·17	0·15	**0·16**	0·16
Rural Districts	0·17	0·14	0·15	0·16	0·15	**0·15**	0·15

* Exclusive of Moss Side and Withington.

Table V., which compares the mortality from Diphtheria and Membranous Croup in Manchester with that of other parts of the country, shows that Manchester still occupies an unenviable position. No appreciable diminution has occurred since 1904.

ENTERIC FEVER.

By Dr. J. R. Hutchinson.

In the Annual Report of the Medical Officer of Health for 1907 a detailed analysis of the facts, deduced from the behaviour of Enteric Fever in that year, is to be found.

In this Report the usual tables are submitted, and special attention given to three methods of propagation of Enteric Fever, viz.:

(1) By overlooked or possibly unattended cases;

(2) By shell-fish; and

(3) by Carriers.

It is a matter for regret that all the notified cases were not submitted to enquiry by the same enquirer.

The vast majority of the cases, 349 out of 393, were investigated by the District Sanitary Inspector only. His investigations are limited to his own particular district, and bear no relationship to previously known cases, unless they, too, occur in his own district. Enteric Fever cannot arise *de novo*, and infected persons, rather than infected things, are responsible in most cases for the spread of the disease. An enquirer, therefore, to whom all notified Enteric Fever cases are known, stands an immeasurably better chance of tracking known cases to their sources, and of finding overlooked cases. The services of such an enquirer were only available for the investigation of 44 cases during the year. In this comparatively small proportion the probable source of infection was found in 18 instances, whilst 2 sequences, one of 6 and another of 4 cases, were found.

Unfortunately, pressure of work prevented Inspector Hewitt's services being utilised in this direction any further.

The number of cases of Enteric Fever notified was greater than that for any year since 1898. The death-rate, too, is double that of 1907. Only in this year and in 1905, however, has it been smaller than for 1908.

Table I.

Incidence of and Death-rate from Enteric Fever in Manchester.

Number of notified cases, deaths, and death-rates per 1,000 *living from Enteric Fever in each of twelve successive years.*

Year	1897	1898	1899	1900	1901	1902
No. of cases notified	503	642	381	378	359	378
No. of deaths	95	120	73	75	75	66
Death-rate—Manchester..	0·18	0·22	0·13	0·14	0·14	0·12
Death-rate—England and Wales	0·16	0·18	0·20	0·17	0·16	0·13

Year	1903	1904	1905	1906	1907	1908
No. of cases notified	387	325	345	384	265	393
No. of deaths	93	66	55	83	37	75
Death-rate—Manchester..	0·17	0·12	0·09	0·14	0·06	0·11
Death-rate—England and Wales	0·10	0·09	0·09	0·09	0·07	0·07

The death-rate for Manchester in five-yearly periods has been:—1886–90, 0·30; 1891–95, 0·24; 1896–1900, 0·18; 1901–05, 0·13.

Incidence of Disease According to Locality.

The attack rate is highest in the Manchester Township, and next highest in South Manchester.

The highest attack rates are found, in order of magnitude, in Crumpsall, North Manchester, West Gorton and Openshaw South Manchester, and Ancoats Manchester Township.

TABLE II.

ENTERIC FEVER, 1908.—NUMBER OF ATTACKS IN DISTRICTS, WITH ATTACK RATE, CASE FATALITY PER CENT., AND REMOVALS TO HOSPITAL PER CENT.

DISTRICTS	ATTACKS	ATTACK RATE PER 1,000 LIVING	† CASE FATALITY PER CENT.	REMOVALS TO HOSPITAL PER CENT.	MEAN ATTACK RATE 1898-1907
Ancoats	52	1·18	21·1	69·2	0·77
Central	14	0·55	21·4	78·6	0·60
St. George's	35	0·60	20·0	91·4	0·83
Cheetham	12	0·28	16·7	33·3	0·53
Crumpsall	12	1·25	...	58·3	0·58
Blackley	7	0·70	14·3	28·6	0·53
Harpurhey	5	0·21	...	80·0	0·94
Moston	7	0·33	42·9	71·4	0·52
Newton Heath	25	0·63	32·0	60·0	0·78
Bradford	13	0·50	30·8	46·2	0·99
Beswick	5	0·39	20·0	100·0	0·88
Clayton	3	0·20	33·3	66·7	1·04
Ardwick	22	0·48	18·2	68·2	0·65
Openshaw	44	1.49	11·4	63·6	0·78
Gorton (West)	45	1·37	13·3	71·1	0·99
Rusholme and Kirkman.	8	0·29	25·0	62·5	0·36
Chorlton-upon-Medlock	23	0·41	34·8	60·9	0·42
Hulme	46	0·72	17·4	73·9	0·64
Moss Side	15	0·52	33·3	93·3	...
City of Manchester	**393**	**0·60**	**20·1**	**69·0**	**0·69**

† Corrected; the fatal cases are those actually occurring amongst the cases notified.

It is difficult to see why Crumpsall should occupy such a position. On this occasion it is closely followed by West Gorton, whereas in 1906 the positions were reversed.

The high incidence in the latter district is no new feature. In this particular instance, however, it is undoubtedly partly due to an epidemic which prevailed in an area off Gorton Lane in the months of September and October. This epidemic is dealt with later on, and its causes discussed. Personal contact and overlooked cases are mainly responsible for the heavy incidence of the disease in Openshaw.

Incidence of the Disease According to Age.

The appended table (3) gives in concise form the number of attacks, their age incidence, and the case fatality per cent. at different ages.

Table III.

Enteric Fever.—Number of Attacks, of Deaths, and Case Fatality per cent. at Different Ages, for the Ten Years 1898–1907, and for 1908.

Ages	1898-1907			1908		
	Attacks	Deaths	Case Fatality per cent.	Attacks	Deaths	Case Fatality per cent.
Under one year ...	6	1	16·7	...	...	...
1 to 2 years ...	24	1	4·2	3	...	...
2 to 3 ,, ...	40	4	10·0	5	1	20·0
3 to 4 ,, ...	62	3	4·8	8	2	25·0
4 to 5 ,, ...	72	6	8·3	8	1	12·5
5 to 6 ,, ...	81	7	8·6	8	...	...
6 to 7 ,, ...	91	8	8·8	6	...	...
7 to 8 ,, ...	79	6	7·6	8	1	12·5
8 to 9 ,, ...	89	11	12·4	10	1	10·0
9 to 10 ,, ...	71	7	9·9	6	...	...
10 to 15 ,, ...	476	56	11·8	57	3	5·3
15 to 20 ,, ...	558	95	17·0	45	8	17·8
20 to 25 ,, ...	635	135	21·2	48	7	14·6
25 to 35 ,, ...	940	200	21·3	96	22	22·9
35 to 45 ,, ...	380	103	27·1	54	23	42·6
45 to 55 ,, ...	177	51	28·8	23	5	21·7
55 to 65 ,, ...	51	19	37·2	8	5	62·5
Over 65 ,, ...	12	6	50·0	...	...	...
All ages	**3844**	**719**	**18·7**	**393**	**79**	**20·1**

Attention might be drawn to the very heavy incidence of Enteric Fever during the wage-earning period of from 15–55 years. The heavier rate of incidence appears to begin at or about the age of 10 years, for the number of cases occurring in the third quinquennium is double the figure for the previous quinquennium.

The case fatality, too, increases (see figures for 1898–1907) *pari passu* with advancing years, interrupted, it is true, in 1908 by a big drop in the 45–55 year period.

The facilities for infection are greater during the working years of life than at any other period. At or about the age of 14, when children leave school, they are less under parental control. This independence grows until such time as they become their own masters. They go their own way, often heedless of what they eat or drink. Many of the male portion, at least, subsequently develop alcoholic habits, and the expression "Patient often calls in and eats mussels when he is drunk," is constantly occurring in the investigation sheets.

It is notoriously difficult to diagnose Enteric Fever in the first two or three years of life. Children at this age are susceptible to so many and to such varied affections of the intestinal tract that mistakes are bound to occur.

The only way in which to settle the diagnosis beyond doubt is by a blood examination, and although this method is gaining in popularity, the symptoms of Enteric Fever in a young child, particularly in a "marasmic" child, may be so anomalous as to lead to no suspicion of the disease, and a blood examination is therefore not made.

For these reasons it is at least doubtful whether the figures given as representing the incidence of Enteric Fever in children under 3 years of age can be relied upon.

Incidence According to Sex.

In accordance with the general rule, adult males constitute the bulk of the cases. Children come next, followed in order by unoccupied and occupied females.

The actual percentages are as follows:—

(1) Occupied males, 14 + ...	49·5 per cent.
(2) Occupied females, 14 + ...	9·4 „
(3) Unoccupied females, 14 + ...	15·0 „
(4) Children under 14	26·0 „

The number of attacks in children is somewhat larger than in former years. It is amongst children that overlooked cases are most liable to occur. With the increasing popularity of Widal's test as an aid to diagnosis, the number of attacks in children will probably be found to increase still more.

Table iv.

Enteric Fever Attacks in weeks Reported in 1908, According to date of Onset.

First Quarter		Second Quarter		Third Quarter		Fourth Quarter	
Jan. 4	13	Apl. 4	3	July 4	1	Oct. 3	13
,, 11	6	,, 11	4	,, 11	...	,, 10	9
,, 18	6	,, 18	6	,, 18	1	,, 17	8
,, 25	5	,, 25	7	,, 25	1	,, 24	7
Feb. 1	6	May 2	4	Aug. 1	1	,, 31	6
,, 8	7	,, 9	5	,, 8	2	Nov. 7	13
,, 15	6	,, 16	2	,, 15	2	,, 14	9
,, 22	2	,, 23	3	,, 22	10	,, 21	19
,, 29	7	,, 30	4	,, 29	4	,, 28	32
Mch. 7	8	June 6	2	Sept. 5	10	Dec. 5	31
,, 14	2	,, 13	4	,, 12	8	,, 12	19
,, 21	4	,, 20	1	,, 19	7	,, 19	17
,, 28	6	,, 27	...	,, 26	8	,, 26	11
						Jan. 2/09	21
Total...	78	Total...	45	Total...	55	Total...	215

City Total 393

Table 4 shows the number of cases occurring in weeks according to date of onset.

The weekly-attack figures correspond very closely with those of previous years, the smallest number of cases occurring in the 25th to the 28th week.

After the 28th week the number of cases rises fitfully to the 40th week; the rise is not sustained, however, until the 47th week. In the 50th week there is a sudden drop, followed by a second drop in the 52nd week.

There would appear to have been a critical rise in the 34th week, there being as many cases beginning in that week as in the immediately preceding four weeks put together.

The extent of the rise in the 47th week is without precedent, as indeed is the further increase in the 48th week.

The rise would appear to have been sustained until at least the end of the first week in January, 1909.

TABLE V.

ENTERIC FEVER ATTACKS, 1908.—RATES PER 1,000 LIVING, COMPARED WITH MEAN OF FIVE YEARS.

	1903	1904	1905	1906	1907	Mean 1903-7	1908
Twelve Notification Towns ...	0·81	0·71	0·61	0·34	0·48	**0·59**	0·56
City of Manchester	0·70	0·58	0·59	0·65	0·41	**0·59**	0·60
Manchester Township	0·77	0·82	0·66	0·73	0·50	**0·70**	0·79
North Manchester.....	0·59	0·56	0·58	0·77	0·32	**0·56**	0·44
South Manchester.....	0·73	0·47	0·55	0·53	0·43	**0·54**	0·61

TABLE VI.

ENTERIC FEVER MORTALITY, 1908. RATE PER 1,000 LIVING, COMPARED WITH MEAN OF FIVE YEARS.

	1903	1904	1905	1906	1907	Mean	1908
England and Wales	0·10	0·09	0·09	0·09	0·07	**0·09**	0·07
London	0·09	0·06	0 05	0·06	0·04	**0·06**	0·05
Dublin	0·24	0·19	0·16	0·16	0·11	**0·17**	0·14
City of Manchester	0·17	0·12	0·09†	0·14†	†0·06	**0·12†**	0·12
Manchester Township	0·16	0·15	0·12	0·16	0·09	**0·14**	0·15
North Manchester.....	0·15	0·11	0·07	0·11	0·05	**0·10**	0·07
South Manchester.....	0·18	0·11	0·09†	0·16†	†0·05	**0·12†**	0·13

† Exclusive of Moss Side and Withington.

Tables 5 and 6 give respectively the attack-rate and the death-rate, as compared with the previous five years.

Table vii.

Summary of Bacteriological Examinations of the Blood of Suspected Enteric Fever Cases (Widal's Reaction).

Reaction	+	−	Doubtful *	Total blood specimens taken	None taken
First Quarter.. ..	85	11	6	102	5
Second Quarter ..	42	7	5	54	3
Third Quarter ..	22	7	5	34	7
Fourth Quarter ..	138	14	19	171	17
	287	39	35	361	32

* This Class includes all cases about which any doubt at all exists, *e.g.* : A case reported as giving a "Reaction + but slow and incomplete" would be classified under this head.

Table 7 explains itself. A few comments are, however, necessary. The number of cases returned as giving a negative reaction is 39. In 12 of these cases the specimen appears, if the Inspector's date of onset of the disease is correct, to have been taken before the 10th day of the disease, or the amount of blood withdrawn was insufficient for the purpose of the test. In every instance where a negative reaction was obtained the certifying practitioner was written to and his opinion asked as to the diagnosis. If still in doubt, he was requested to send a second specimen of blood. In 6 cases in which the specimen taken appears to have been free from objection, and in 5 others in which there was some objection, the letters to the certifying practitioners were ignored. In 7 cases the medical man adhered to his opinion; (in 3 of these 7 the blood specimen appears to have been free from objection). The remaining 3 cases, in which for one or another reason the blood specimen submitted was faulty, subsequently proved to be true cases of Enteric Fever. This accounts for 21 of the 39 cases.

Three cases died before second blood specimens could be obtained. Second specimens, all giving positive results, were taken in 10 cases. The other 5 cases were all hospital treated, and were discharged as having had the disease.

One curious case—that of F. K.—occurred, in which the blood taken on the 7th, 21st, and 34th day of the disease gave negative results, whilst a fourth specimen taken on the 44th day gave a positive reaction. Clinically the case throughout was typical of Enteric Fever.

The Spread of Enteric Fever by Overlooked and Unattended Cases.

In the 2½ months ending Mid-September, 1908, 32 cases of Enteric Fever occurred in an area composed of 3 streets in the vicinity of Gorton Lane, West Gorton.

This outbreak was made the subject of a special report to the Medical Officer of Health in January of this year.

Certain features of this epidemic merit further consideration, as they serve to show the part played by overlooked and unattended cases in the spread of the disease.

Of the 32 cases, 10 were notified by private medical practitioners, 5 were sent into the Union Hospital as suffering from various diseases, but were subsequently notified by the Union Medical Officer, whilst 17 were found by members of the Medical Officer of Health's staff on house-to-house visitations. Nine of the 17 cases found by the Medical Officer of Health's staff had previously sought medical advice, one had been under treatment 6 weeks, another 3 weeks, a third 7 days, a fourth 2 days, whilst in 4 cases the patients had "two or three times" been to see the doctor at his surgery. In one case the medical man had ceased to attend. None of the cases had, of course, been notified. In none of these cases had blood specimens been taken at the time of the first house-to-house visitation. Subsequently 8 of them gave positive, 3 gave doubtful, and 5 gave negative reactions. In one case no blood was obtainable.

Two of the negative cases were hospital treated, and were there regarded as cases of Enteric Fever.

The dimensions of the outbreak and its gradual rise suggested the presence of overlooked or possibly unattended cases.

All the cases were most carefully investigated as to their sources, and it was found that, at all events, shellfish (except in case 17), greens, milk, water, and cooked meats could be excluded. It was further noticed that the cases appeared to fall into a number of independent groups, A, B, C, D, E.

Group A contained Cases 1, 12, *and* 22.

Case 1 sickened on August 6th, with "Fever, Diarrhœa, Headache, and Blood in the Stools." On August 21st his sister (Case 12), and on September 11th his father (Case 22) commenced to be ill. Subsequently they were all admitted to the Union Hospital, and were there regarded as cases of Enteric Fever, in spite of the fact that Cases 12 and 22 gave negative blood reactions. Case 1 was under treatment for 3 weeks prior to admission to hospital.

Group B centres round Case 2. This boy began to be ill on August 12th. He attended school for 11 days after this date, and was not seen by a medical man for at least another 11 days. In the meantime he had infected both his parents and his two sisters (Cases 8, 13, 19, 20). Cases 4 and 10 were constant playfellows of Case 2's, and were together repeatedly before September 5th, when Case 2 was first seen by a medical man. Case 15, too, was a playfellow of Cases 2, 4, and 10, and went to school with Case 4. There is no doubt but that Case 10 infected his mother, Case 27. Case 10 went about undetected for 6 weeks; he began to be ill about August 24th, but did not come under observation until October 6th. Case 15 appears to have infected her sister, Case 23, and her brother, Case 25. Case 25 in turn infected another sister, Case 30.

Cases 2, 8, and 13 were nursed by Case 24, who subsequently herself developed the disease. Her husband, too, Case 29, developed an illness with Enteric symptoms, although his blood gave a negative reaction.

Case 24 was in the habit of visiting and cooking for Case 21—this before she herself became ill, but whilst she was nursing other cases in the street. It is reasonable to suppose that Case 21 was infected in this way.

There still remain to be considered Cases 3, 5, 6, 7, 9, 11, 14, 16, 17, 18, 26, 28, 31, and 32.

Group C appears to start from Case 3. Case 3 developed Diarrhœa on August 13, and was not medically treated, as this was attributed to the hot weather. Be that as it may, however, Cases 5, 6, and 7, 9, 11, and 18, all of whom lived in the same house as Case 3, developed Enteric Fever. Cases 5, 6, and 18 gave positive blood reactions. Case 7 died before his blood could be taken. The blood reaction in Cases 9 and 11 was negative. Case 14, a relation of Cases 5, 6, 9, and 18 was probably infected by one of them. Cases 3, 7, and 11 slept together, as did cases 5, 6, 9, and 18.

Group D.—It is just a question whether or not the cases constituting this group should not come under Group B. Case 16 was a constant playfellow of Cases 2 and 10, but as nothing absolutely definite is known of Case 16's movements prior to his falling ill on September 14th, he will be regarded as the starting point of a fourth group.

Case 16 infected Case 32, his sister, and his playfellow, Case 26.

Group E.—Case 17 was probably infected by shell-fish. He infected his lodger, Case 31.

In *Group A* Case 1 was responsible for two other cases. Case 1 was *overlooked.*

In *Group B,* Case 2 was certainly responsible for four cases which occurred in the same house, and probably indirectly responsible for 7 further cases. Case 2 was *unattended* for 3 weeks. Case 10 went about *unattended* for 6 weeks. Case 4 was *overlooked.* Case 27 was *unattended.* Case 23 was *overlooked.*

In *Group C,* Case 3 was *unattended* ; Case 5 had an ambulatory attack, and was *unattended* ; Case 6 was *overlooked* ; Cases 9 and 11 were *unattended,* whilst Case 18 was *overlooked* ; Case 14 was *unattended*

Out of a total of 32 therefore there were 5 overlooked and 8 unattended cases. There is no doubt but that these cases are in a great measure responsible for the large number of cases that subsequently occurred.

Out of a total of 88 houses in the 3 streets, 14 were invaded by Enteric Fever In 2 instances, every person in the house (7 in one and 5 in the other) was infected. The primary cases in both instances were unattended

Under such circumstances extension of the disease is inevitable.

In the overlooked cases full advantage does not seem to have been taken of the facilities offered by the Corporation for the gratuitous examination of the blood (Widal's test).

This is much to be regretted, as early diagnosis means early isolation.

In localised epidemics many anomalous cases are met with, and a positive diagnosis, without the aid of a blood examination, is next to impossible ; in any case much delay is occasioned without such examination.

It cannot be too strongly insisted upon that "In temperate countries, a Fever which lasts a week without the appearance of any characteristic rash, or any local inflammation, is almost always typhoid." (Caiger in Allchin's System).

TABLE 8.

TABLE SHOWING THE NUMBER OF CASES PER QUARTER, WITH THEIR RELATIONSHIP TO PREVIOUS CASES, AND THEIR ASSOCIATION WITH THE CONSUMPTION OF SHELL-FISH.

	Traced to previous attacks	In association with shell-fish	Not traced
First Quarter	26	25	27
Second Quarter	15	9	21
Third Quarter	16	0	39
Fourth Quarter	40	52	123
.. .. 1908	97	86	210

From Table 8 it will be seen that 86 cases, or nearly one quarter of the total number, were found to be associated with the consumption of shell-fish. In 85 cases mussels, and in 1 case oysters, came under suspicion.

It is worthy of notice that in the third quarter no cases of this disease were traced to shell-fish consumption. The first two months of this quarter are a part of the close season for shell-fish. The shell-fish season in England and Wales is from September 1st to April 30th. It is not to be expected, therefore, that the influence of this form of food on the incidence of Enteric Fever should begin to be noticeable until towards the end of September.

The close season, however, applies only to England and Wales. Shell-fish continue to be imported into this country from Scotch and Irish layings, and it is important to note in the appended table (Table 9) that only one case of Enteric Fever in association with mussel consumption occurred after the middle of May, when it may be assumed that the possible influence of mussels from English and Welsh sources has ceased. In this instance, which occurred in the second week in June, the suspected mussels were of Irish origin (Omeath).

TABLE 9.

	No. of cases associated withshell-fish consumption	No. of week of year	
Week ending Jan. 4 ..	8	1	
,, ,, ,, 11 ..	5	2	
,, ,, ,, 18 ..	3	3	
,, ,, ,, 25 ..	3	4	
,, ,, Feb. 1 ..	1	5	
,, ,, ,, 8 ..	—	6	
,, ,, ,, 15 ..	—	7	Importations of shell-fish from all parts of the United Kingdom and from Ireland.
,, ,, ,, 22 ..	2	8	
,, ,, ,, 29 ..	—	9	
,, ,, March 7 ..	—	10	
,, ,, ,, 14 ..	3	11	
,, ,, ,, 21 ..	—	12	
,, ,, ,, 28 ..	—	13	
,, ,, April 4 ..	3	14	
,, ,, ,, 11 ..	—	15	
,, ,, ,, 18 ..	—	16	
,, ,, ,, 25 ..	1	17	
,, ,, May 2 ..	2	18	
,, ,, ,, 9 ..	2	19	
,, ,, ,, 16 ..	1	20	
,, ,, ,, 23 ..	—	21	Closed season for England and Wales only. Importations from Scotch and Irish layings continue.
,, ,, ,, 30 ..	—	22	
,, ,, June 6 ..	—	23	
,, ,, ,, 13 ..	1	24	
,, ,, ,, 20 ..	—	25	
,, ,, ,, 27 ..	—	26	
Four weeks ending July 26 ..	—	27–30	
Five ,, ,, Aug. 29 ..	—	31–35	
Four ,, ,, Sept. 26 ..	—	36–39	
Two ,, ,, Oct. 10 ..	—	40–41	
Week ending Oct. 17 ..	2	42	
,, ,, ,, 24 ..	1	43	
,, ,, ,, 31 ..	3	44	Importation from all parts of the United Kingdom and from Ireland.
,, ,, Nov. 7 ..	2	45	
,, ,, ,, 14 ..	3	46	
,, ,, ,, 21 ..	1	47	
,, ,, ,, 28 ..	4	48	
,, ,, Dec. 5 ..	6	49	
,, ,, ,, 12 ..	9	50	
,, ,, ,, 19 ..	12	51	
,, ,, ,, 26 ..	8	52	

The sex distribution of the 86 cases associated with the consumption of shell-fish is very striking, the ratio being a little more than 4 to 1 in favour of males. The actual figures are 71 and 17.

Table 10.

Table showing Interval between the Consumption of Shell-fish and onset of Symptoms, and showing also the Condition—whether Cooked or Raw—of the Shell-fish.

Intervals	Cooked	Raw	Both cooked and raw
Less than 10 days	6	2	—
10 days	—	2	—
11 ,, ...	1	1	—
12 ,, ...	1	1	—
13 ,, ...	1	—	—
14 ,, ...	2	3	3
15 ,, ...	2	1	1
16 ,, ...	1	2	2
17 ,, ...	—	1	—
18 ,, ...	1	—	—
19 ,, ...	2	2	1
20 ,, ...	1	2	—
21 ,, ...	2	5	—
Frequently	3	9	5
Uncertain..	11	6	2
Totals	34	37	15

These figures, so far as regards the condition in which the shell-fish were eaten, are not altogether to be relied upon. In the great majority of instances in which only cooked mussels are said to have been eaten, it is highly probable that some have been eaten raw. The fact that the male incidence is higher than the female favours this hypothesis, as many more men than women buy mussels in the streets. The reason why more cases are not traced to their ultimate source is because in considerably more than one-half the cases the mussels are bought from an unknown hawker. They are necessarily bought in the raw state, and even if taken home to be cooked it is more than probable that a few at least will be eaten raw whilst the others are cooking.

Amongst the 86 cases 21 deaths occurred, 16 males and 5 females. Nine of these patients are said to have eaten cooked mussels only; seven of these patients are said to have eaten raw mussels only; whilst 5 are stated to have eaten them both raw and cooked.

The length of time elapsing between the consumption of the mussels and the onset of symptoms is given in Table 10.

As regards the particular layings, attention must be called to Cases 1, 2, 8, 32, 38, and 76.

Case 1 ate "steamed" mussels on September 1st, 1907, and frequently from thence on up to and including November 29th, 1907. On this last occasion he ate one mussel raw, and remarked to his wife that he "would have no more, as they were not good."

He was taken ill on December 4th, 1907. His blood gave a + reaction on the 27th of that month, and he died on January 12th, 1908.

The mussels were obtained from a shop, "W," and their source was ascertained to be Conway. The patient was the only person to eat any of the mussels raw.

Case 2 ate "cooked" mussels on December 17th, 1907. He commenced to be ill seven days later. His blood gave a + reaction on December 29th, and he died on January 3rd, 1908. He is stated to have been suffering from Influenza prior to November 24th, 1907. All the family partook of cooked mussels on December 17th; no other member was ill however. The mussels were obtained from the shop "W," and their source was Conway.

Case 8 ate both raw and cooked mussels "several times" at the beginning of December, 1907. Other members of the household ate cooked but not raw mussels. Case 8 began to be ill on December 12th, 1907; on December 31st his blood gave a + reaction. He died on January 27th, 1908. The mussels were obtained from the shop "W," and as they were bought at about the same time that Case 1 was patronising this shop it is reasonable to suppose that the source of the mussels was Conway.

Case 32 ate 24 steamed mussels and a plate of oysters at a shop, "H," on December 21st, 1907, in company with three other people. She began to be ill on January 3rd, 1908. Her blood gave a + reaction on January 10th, 1908, and she died on January 16th, 1908. Her three companions—one of whom had Enteric Fever two years before—have kept quite well. The source of the mussels was stated to be Aberdovey or Conway.

Case 38 ate some cooked mussels on December 21st, 1907, as did a friend who was with him. On December 28th he commenced to be ill. He was admitted to Monsall Hospital on January 16th, and died eight days later. In hospital his blood gave a positive reaction. The mussels were obtained from the shop "W," and their source was ascertained to be Conway. The friend of this patient has remained in good health.

Case 76 ate a quantity of steamed mussels on January 18th, 1908. No one else partook of any. He commenced to be ill on February 6th. His blood gave a + reaction 14 days later. He ultimately recovered. He is stated to have

complained to a friend who was waiting for him outside the mussel shop that some of the mussels were bad, and had made him feel sick. He ate the shellfish at the shop "W." Their source was ascertained to be Conway.

Here, then, is a series of 6 cases, in 5 of which Conway mussels, all from the same shop, were eaten between November 29th, 1907, and January 18th, 1908. In the sixth case the mussels were obtained from a second shop, "H," but were stated to have come from Aberdovey or Conway. Of the 5 cases connected with the shop "W," 4 died. The sixth case (shop "H") also died

Case 293 also ate mussels from the shop "W." In this instance the source was not ascertained.

The shop "H" has an equally interesting history. Case 337 called here on November 14th, 1908, and ate one-pennyworth of steamed mussels; a friend who was with him ate whelks. Two days later he was taken ill with stomach pains and Diarrhœa. On December 3rd he was seen by a medical man, who suspected Enteric Fever. On December 13th, 1908, his blood gave a negative reaction. He was removed to hospital, however, and was there regarded as a case of that disease. The mussels in this case were said to have been obtained from Killorglin, Ireland.

Case 376, on November 28th, 1908, called at the shop "H," and ate two-pennyworth of steamed mussels. On December 13th he was taken ill. His blood gave a "+ indefinite" reaction. He was removed to hospital, and was there regarded as a case of Enteric Fever. The source of the mussels in this case was either Barmouth or Conway.

Cases 356 and 386 both visited the shop "H" on November 21st, 1908. On December 1st, Case 356 began to be ill. His blood gave a + reaction on December 25th.. Case 386, too, is stated to have begun to be ill at the same time. His blood gave a + reaction on December 17th, 1908. The source of the mussels in both these cases was the same as in Case 376.

Perhaps the most convincing case associated with mussels consumption is Case 369. On December 11th, 1908, a letter was received from the Medical Officer of Health of Liverpool stating that a man, "W," had been admitted to the Infectious Diseases Hospital in that City suffering from Enteric Fever, probably contracted in Manchester. The case was investigated by Inspector Hewitt, who found that this man had gone to Liverpool from an address in Manchester on November 25th, 1908. For seven or eight days prior to this he had been complaining of feeling ill. Twice between November 2nd and 14th, and then again on November 16th, 17th, 18th, 19th, and 20th. "W" had called at a shop, "J," and had eaten steamed mussels on each occasion in company with two fellow workmen, "D" and "B," who also partook.

These three men lived near each other, and had to pass the mussel shop on their way home from work. Further, the wife of the man "D" visited the shop in company with her husband on November 2nd, and ate two-pennyworth of steamed mussels.

"W" began to be ill on November 17th or 18th. He went to Liverpool on November 25th, and was reported to be suffering from Enteric Fever on December 11th. He was not medically attended before leaving Manchester.

"D" began to be ill some time between November 18th and 21st. On this latter date a medical man was called in, but the true nature of the disease was apparently not suspected at the time. At the suggestion of the Medical Officer of Health his blood was examined on December 19th, and gave a positive reaction.

"D's" wife began to be ill sometime after November 13th. On December 8th she was seen by a medical man. Her blood gave a positive reaction on December 9th, and she was removed to hospital two days later.

"B" began to be ill on November 22nd. He left Manchester three days later, and on December 18th he was reported to be in the Romford Infectious Diseases Hospital, Essex, suffering from Enteric Fever.

On November 21st, "B" and a friend, "M," of Bury, had a drinking bout, and called at the shop "J" for mussels. This was the day before "B" complained of feeling ill. It was found impossible to trace the man "M." He appears to have returned to Bury on November 21st. Enquiries at the place of work of the men, "W," "D," and "B," elicited no history of illnesses amongst the employés there. These men, "W," "B," and "D," did not live together, and no history of illnesses, remote or recent, could be obtained on enquiry at the houses of the people with whom they lodged.

It might reasonably be contended that the man "D" was infected by his wife, but this can hardly hold good between the three men. The mussels eaten by these people prior to November 7th were obtained from Conway or Omeath layings. After that date they were got from Conway or Barmouth.

From a review of all these cases there appears to be little doubt but that the association between Enteric Fever and mussel consumption is something more than mere coincidence. Association would appear to amount to infection.

On page 90 of the Annual Report of the Medical Officer of Health for 1907, four reasons are given for believing that in many cases the relationship between shell-fish and this disease is causal, and not merely casual. At the risk of repetition these four reasons are reproduced. They are :—

"1. From time to time two persons consuming mussels purchased from the same source at the same time are subsequently attacked by Enteric Fever."

Cases 356 and 386 are cases in point, as is the series of cases clustered round Case 369.

"2. The cases traced to some previous source of personal infection are separate from those traced to shell-fish."

In only one case, that of a man and wife ("D," in the Case 369 series) were both these factors in evidence.

"3. In 1902 an investigation was made as to the consumption of shell-fish in 1,354 houses, inhabited chiefly by artisans, and it was found that shell-fish had been used at one or another time during the previous year in 384 houses. At 90 houses they had been consumed raw, at 360 cooked, at some they had been consumed both raw and cooked."

That is to say, that shell-fish, cooked or uncooked, had been eaten at 28·3 per cent. of the houses enquired at.

In 1908, 326 houses were invaded by Enteric Fever. At 86, or 26·3 per cent. of these houses, shell-fish had been eaten by the patient—in 50 cases within 3 weeks of the onset of the disease, in 17 cases "frequently," whilst in 19 cases the dates were "uncertain."

"4. A large quantity of mussels consumed outside the home are obtained from street hawkers. It may be assumed that these are, on the average, most likely to carry infection. No small quantity, it is stated, is consumed by men, more or less intoxicated, as they leave the public-house. The mussels used at the home have also been, not infrequently, obtained from street hawkers."

A very large number of the shell-fish cases investigated during the year fall into this category. These constitute the bulk of the 36 cases in which mussels were eaten "frequently," or in which the date of consumption was "uncertain."

In only one of the 14 cases of which particulars are given is it certain that the source of the mussels was not Conway. It is quite certain that Conway mussels only were eaten in 5 cases, whilst in 8 cases Barmouth, Omeath, or Aberdovey mussels may have been eaten.

In the Report of the Medical Officer of Health for 1907, page 91, he states that "one particular mussel, known as the Conway, has again and again come under suspicion."

The evidence obtained during 1908 tends still further to implicate this variety of mussel.

The various Sea Fisheries Committees—constituted under the Sea Fisheries Act of 1888—have control over the mussel layings in their own areas. The control thus exercised is merely a business arrangement for the better conduct

of the mussel industry. Mussel layings exist naturally in many places which are unfortunately prone to sewage contamination. Nothing is said in the Sea Fisheries Committee's Bye-laws about the proximity to the layings of sewer outfalls, etc. It would appear that some amendment in this direction is desirable.

The Markets Committee seems to be fully alive to the harm which will accrue to the mussel industry unless something is done to allay the fear which exists in the public mind of contracting Enteric Fever from the consumption of contaminated shell-fish. It has, in consequence, carried out a series of experiments with sewage-contaminated mussels, and as a result certain recommendations, which make for greater safety, have been put forward.

It remains to be seen whether these recommendations—if adopted—will serve to diminish the incidence of Enteric Fever amongst the shell-fish eating public.

The Spread of Enteric Fever by "Carriers."

One Typhoid Carrier case was found during the year 1908, whilst it was also found that a second patient, who had the disease in September, 1908, was excreting the bacilli five months later. This case will be further investigated. The first case is recorded as possessing points of interest on page 107 of the Medical Officer of Health's Annual Report for 1907 (Case 130). Since that time further details have been brought to light. Briefly, the history of the cases is as follows :—

Case 229, 1908. J. H. W., æt. 36, commenced with Enteric Fever about September 24th, 1908; the blood test was positive on October 19th, 1908. He had been living at the house in which he then was 4 days. Prior to this he had lodged for some months at the house of a Mrs. W. Mrs. W. is a widow who gets her living by taking in lodgers; she does all her own housework and commonly has two or three lodgers. At the same house in which J. H. W. was presumably infected, three previous cases had occurred amongst Mrs. W.'s lodgers.

Case 130, 1907. J. W. E., æt. 19, commenced with Enteric Fever on September 7th. He was removed to Monsall on the 28th of that month; his blood gave a positive reaction.

Case 244, 1906. A. A., æt. 28, commenced with Enteric Fever on September 4th; blood test positive; death occurred October 16th, 1906.

Case 135, 1906. A. W., æt. 28, commenced with Enteric Fever on May 2nd; blood test positive; death took place on June 14th, 1906.

Three further cases of Enteric Fever were traced to two other houses at which Mrs. W. had previously taken in lodgers.

Case 174, 1905. H. R. æt 19. Onset of Disease May 20th; blood test positive. There is a chance that this case was infected outside Manchester.

Case 118, 1905. H. P., æt. 25. Onset April 8th, 1905; blood test positive.

A daughter of H. P's too had a suspicious illness about this time, but a blood specimen could not be obtained.

Case 388, 1898. W. D., æt. 23. Onset October 4th; removed to Monsall and died November 1st, 1898.

The only factor common to all these cases is the presence of Mrs. W.

No history of contact with known Enteric Fever cases, or of consumption of shell-fish, was obtainable in any of the series.

Mrs. W.'s medical history is as follows: Up to 1893, when she was about 54 years of age, she enjoyed good health and never had occasion to see a medical man. In this year she had an attack of Influenza and Pneumonia, for which she was treated in a Union Hospital. She remembers little about this illness, except that she had headaches and pains in the back, and was delirious. She was ill for about five weeks, and was kept on fluid foods. Since this illness she has suffered from periodical attacks of abdominal pain and vomiting.

These attacks did not follow immediately on the illness of 1893; there was an interval of about five years, during which her health was good. (*Vide* Inspector Hewitt's report on 130, 1907.)

Since 1898, however, she has had many attacks of abdominal pain at intervals of a few days (three to seven). During an attack, which lasts from a few to 24 hours, the patient's feet are cold, the urine is like blood, there is much abdominal pain which is relieved by vomiting.

A sample of blood obtained in November, 1907, gave a negative reaction.

Five of these cases are recorded in the Annual Report of the Medical Officer of Health for 1907.

The occurrence of a sixth case in October, 1908, caused further search to be made, when a seventh was discovered so far back as 1898.

No cases can be found as having occurred in the vicinity of Mrs. W. prior to 1898. Possibly some have been overlooked. It was not until 1898 that Mrs. W. began to suffer from abdominal pain, etc., after her five years of good health. The year she began to be ill was marked by the appearance of the first known case of Enteric Fever amongst her lodgers.

It is curious that no further cases should come to light between 1898 and 1905. It is a well-known fact that in "Carrier" cases the bacilli are excreted in the stools and urine in batches, with bacillus free intervals. Many such batches must have been shed from time to time during these years. At the request of the Medical Officer of Health, Mrs. W. was examined in October, 1908, by the practitioner who usually attended her. He was unable to find any abnormal physical signs, the liver was not enlarged, the gall bladder could not be felt, there was no evidence of gall stones, and no symptoms to suggest their presence. He had had the patient under treatment on and off for "years," for "Indigestion" and "Chronic Constipation." So far as he knew she had never been jaundiced.

On November 4th, 1908, Mrs. W.'s blood gave a positive reaction in 30 minutes.

On the evening of November 4th she was given, at Professor Delépine's suggestion, a dose of Sulphate of Soda, and next morning specimens of her fæces and urine were obtained. Both specimens were found to contain Typhoid bacilli.

A month later (December 3rd), further specimens were obtained without the administration of a cathartic; on this occasion Professor Delépine found Typhoid bacilli in the fæces only. The urine was sterile.

Attempts to get another specimen of blood from this patient were unsuccessful. Further samples of the excretions will, however, be examined.

It seems highly probable that the Influenza and Pneumonia from which Mrs. W. suffered in 1893 was in reality Enteric Fever. It is certainly remarkable that she is not known to have infected anyone prior to 1898, especially so as she was engaged in general housework, including the preparation of food, etc., for her lodgers. Certainly, her attacks of abdominal pain, etc., do not seem to have troubled her before 1898.

She cannot, when her serum gave a positive reaction in November, 1908, have been infected by J. H. W., the last case to occur in her house, as not only did her excretions contain Typhoid bacilli at that time, but they were present in her fæces on December 3rd, six weeks after J. H. W. had been removed to Hospital. The negative blood reaction obtained in November, 1907, is not of great importance, for, as Doerr showed in 1905, the persistence of Typhoid bacilli in the bile is unable to preserve the agglutinating properties of the blood serum.

Supposing Mrs. W. to be a Carrier, why should her blood give a positive reaction in November, 1908, and not in November, 1907?

It has been pointed out by some German observers that this not infrequently occurs. Forster and Kayser suggest that the attacks of abdominal pain, vomiting, etc., which occur from time to time, are due to local inflammatory changes in the gall bladder—set up by the contained bacilli, and that with each attack more agglutinating substances develop in the blood stream. Widal's reaction then would probably be obtained with a blood specimen taken soon after one of the periodic attacks of abdominal pain, etc., but with the lapse of time and without the assistance of another attack, the serum loses its agglutinating properties. Mrs. W. has had "stomach attacks" at intervals of a "few days" for upwards of 10 years.

Explicit directions have been given to Mrs. W. as to the treatment of her excretions, and the necessity of thoroughly disinfecting her hands frequently. The great importance of this latter measure, especially in relation to the preparation of food, has been impressed upon her.

In the investigation of the series of cases in connection with Mrs. W., most valuable assistance was given by Inspectors Hewitt and Higginbotham.

MEASLES

This disease begins to be very fatal in the second half-year, and the largest number of deaths occurs in the second year of age. The number of deaths is still considerable, however, at age four.

Table 1.

Deaths from measles in the City of Manchester.

Years	Under One Year			Years of Age				Total 5 Years and upwards
	Under 3 Months	3-5 Months	6-11 Months	1	2	3	4	
1896–1907	15	57	711	1424	598	341	158	159
1908	5	3	71	154	59	30	22	22

Table 2 shows the annual course of Measles in the City of Manchester. It is least fatal in the fourth quarter, and most fatal usually in the second, though in 1903 and 1908 the first quarter was most severely visited.

The annual course of Measles may be seen from the number of deaths occurring in successive quarters as given below:—

TABLE 2.

YEAR	1st Quarter	2nd	3rd	4th
1902	67	68	60	47
1903	158	104	54	29
1904	100	189	83	53
1905	41	99	77	13
1906	60	266	118	32
1907	51	73	50	55
1908	116	78	71	101

There were two periods in 1908 in which marked increase occurred in the number of notifications received from the Education Offices day by day, viz., from November to February, and again from April to July.

On these notifications is founded the administrative action we pursue. The procedure is as follows:—On the occurrence of a case of Measles or Whooping Cough at one of the Elementary Schools, the School Attendance Officer calls, and leaves a statement showing the children who are to be kept away from school, and the periods over which they are to remain away, also a printed paper of instructions. When the case is notified to the Public Health Office, each case is entered on an enquiry form, which is handed to the District Sanitary Inspector. This Officer calls, verifies the statement of the Attendance Officer, takes particulars of the case and of the sanitary conditions, and advises the parents as to isolation. Any action required is taken on this report. It has been calculated that the number of cases occurring at school is about one-third of the total number. But owing to the rapid manner in which the disease spreads through the lower classes these cases are of special importance.

The number of notifications received in 1908 was: Of families affected, 5,414; of children suffering, 5,684; of these, 4,302 were suffering from Measles, and 1,382 from Whooping Cough.

Table 3 shows the death-rates year by year from Measles and from all causes amongst children under five years of age. In three years the deaths from Measles in this age group exceeded 10 per cent. of the total, and in 1906 approached this figure:—

TABLE 3.—DEATH-RATES FROM MEASLES AND FROM ALL CAUSES UNDER 5 YEARS OF AGE.

	1893	1894	1895	1896	1897	1898	1899	1900
Measles ...	4·40	3·24	7·53	8·48	9·35	4·02	10·31	3·66
All causes ...	86·3	66·5	90·7	80·4	85·3	78·1	87·5	78·3

	1901	1902	1903	1904	1905	1906	1907	1908
Measles ...	4·29	3·51	5·13	6·24	3·10	6·31	2·99	4·58
All causes ...	74·5	64·7	69·5	75·8	59·2	66·6	56·2	60·0

TABLE 4.

A comparison of the mortality due to Measles with that caused by other zymotic diseases, and by Phthisis, is given in the following figures:—

No. of Deaths from	1891	1892	1893	1894	1895	1896	1897	1898	1899
Measles ...	220	369	293	222	505	567	628	271	699
Scarlet Fever... ...	114	130	140	116	173	198	124	65	46
Diphtheria ...	122	91	122	102	72	54	29	41	71
Enteric Fever...	189	124	127	91	95	118	95	120	73
Smallpox	0	2	49	21	2	0	0	0	0
Whooping Cough ...	518	368	240	286	250	359	299	170	227
Diarrhœa, &c. ...	432	418	956	375	904	572	964	1090	1121
Phthisis	1117	1053	1060	1026	1139	1078	1139	1056	1117

No. of Deaths ...	1900	1901	1902	1903	1904	1905	1906	1907	1908
Measles ...	254	292	242	345	425	231	475	229	366
Scarlet Fever ...	105	127	146	97	85	78	108	102	92
Diphtheria ...	76	133	123	136	99	127	119	106	123
Enteric Fever ...	75	75	66	93	66	55	83	37	75
Smallpox ...	0	0	0	24	9	0	0	0	0
Whooping Cough ...	371	224	242	213	280	195	193	314	220
Diarrhœa, &c. ...	822	1019	296	507	761	729	981	291	591
Phthisis ...	1135	1144	1145	1025	1106	988	1089	1092	1088

From the following table it will be seen that the death-rate is steadily in excess of that in London and in the 76 Great Towns. When a study is made of the incidence of mortality in districts it is found that the death-rate from Measles is generally highest in the Manchester Township. It is largely determined by the condition of the children attacked. It is also determined by the conditions to which they are subjected. The greatest indifference is often displayed to the risk of receiving and conveying infection. In this respect the dangerous infectious disease clauses in the London Public Health Act must be of service.

TABLE 5.—1908.—MEASLES MORTALITY.—RATE PER 1000 LIVING, COMPARED WITH MEAN OF FIVE YEARS.

	1903	1904	1905	1906	1907	Mean	1908
England and Wales	0·27	0·36	0·32	0·27	0·36	**0·32**	0·22
76 Great Towns	0·36	0·47	0·39	0·40	0·43	**0·41**	0·31
London	0·45	0·49	0·37	0·41	0·38	**0·42**	0·31
City of Manchester...	0·62	0·76	0·40†	0·83†	0·39†	**0·60†**	0·60†
Manchester Township ...	0·96	0·86	0·64	1·18	0·48	**0·82**	0·70
North Manchester	0·34	0·50	0·39	0·56	0·34	**0·43**	0·54
South Manchester	0·64	0·89	0·28†	0·85†	0·38†	**0·61†**	0·59†
142 Smaller Towns	0·29	0·36	0·31	0·22	0·41	**0·32**	0·20
Rural Districts	0·17	0·23	0·24	0·14	0·25	**0·21**	0·13

† Exclusive of Moss Side and Withington.

From Table 6 we get a more detailed view of the manner in which the mortality from this cause is distributed over the City.

TABLE 6.—1908.—DEATHS AND DEATH-RATES FROM MEASLES IN THE VARIOUS DIVISIONS OF THE CITY.

	Statistical Divisions	Estimated Population	Deaths	Death-rate	Average Death-rate 1898-1907
	City of Manchester	**648,846**	**366**	**0·56**	0·61
	I. Manchester Township ...	125,197	89	0·70	0·83
	II. North Manchester.....	197,527	109	0·54	0·54
	III. South Manchester.....	326,122	168	0·51	0·54
I.	Ancoats	43,206	41	0·93	0·98
I.	Central	24,922	14	0·55	0·69
I.	St. George's	57,069	34	0·59	0·80
II.	Cheetham	42,376	14	0·33	0·28
II.	Crumpsall	9,430	4	0·42	0·27
II.	Blackley.....	9,830	2	0·20	0·40
II.	Harpurhey	23,318	4	0·17	0·55
II.	Moston	20,826	3	0·14	0·44
II.	Newton Heath	39,153	32	0·80	0·56
II.	Bradford	25,355	32	1·24	0·97
II.	Beswick	12,588	11	0·86	0·85
II.	Clayton	14,651	7	0·47	0·49
III.	Ardwick	45,324	21	0·46	0·62
III.	Openshaw	29,040	19	0·64	0·71
III.	Gorton (West)	32,316	18	0·55	0·57
III.	Rusholme and Kirk.....	27,007	6	0·22	0·30
III.	Chorlton-upon-Medlock..	55,597	31	0·55	0·43
III.	Hulme	62,629	55	0·87	0·69
III.	Moss Side	28,522	3	0·10	0·12†
III.	Withington	45,687	15	0·32	0·07†

† Average for the three years 1905-1907.

There were 46 schools in the infant departments of which the percentage of scholars absent, at one time, on account of (suffering from?) Measles reached 10, 20, 30, 40, and 50 per cent. respectively. Of the average numbers attending, 29 had over 10 per cent. away on account of Measles, 13 over 20 per cent., 3 over 30 per cent., and 1 over 50 per cent. These schools were widely distributed over the city.

On the other hand, the school authorities represent that cases are often sent back to school which have been sent home, and that often no effort is made by parents to prevent cases arising in the schools from earlier attacks at home.

WHOOPING COUGH.

TABLE 7.

1908.—WHOOPING COUGH MORTALITY.—RATE PER 1000 LIVING, COMPARED WITH MEAN OF FIVE YEARS.

	1903	1904	1905	1906	1907	Mean	1908
England and Wales	0·27	0·34	0·25	0·23	0·29	**0·28**	0·27
76 Great Towns.....	0·33	0·40	0·29	0·28	0·35	**0·33**	0·29
London	0·35	0·33	0·32	0·26	0·38	**0·33**	0·20
City of Manchester ...	0·38	0·50	0·34†	0·33†	0·52†	**0·42†**	0·35†
Manchester Township ...	0·25	0·70	0·30	0·34	0·51	**0·42**	0·31
North Manchester.....	0·24	0·47	0·27	0·41	0·35	**0·35**	0·26
South Manchester	0·55	0·42	0·40†	0·26†	0·67†	**0·46†**	0·43†
142 Smaller Towns	0·28	0·35	0·23	0·20	0·29	**0·27**	0·25
Rural Districts	0·22	0·27	0·20	0·19	0·21	**0·22**	0·25

† Exclusive of Moss Side and Withington.

Whooping Cough was, in 1908, most fatal in South Manchester. From the table given below we see that, so far as individual districts are concerned, the highest death-rates were experienced in Openshaw, Hulme, Ardwick, West Gorton, Bradford, and Crumpsall,

Table 8.

The following table shows the districts most affected:—

1908.—Deaths and Death-rates from Whooping Cough in the various divisions of the City.

	Statistical Divisions	Estimated Population	Deaths	Death-rates	Average Death-rates, 1898–1907.
	City of Manchester	**648,846**	**220**	**0·33**	**0·42**
I.	Manchester Township.....	125,197	39	0·31	0·47
II.	North Manchester	197,527	53	0·26	0·39
III.	South Manchester	326,122	128	0·37	0·42
I.	Ancoats	43,206	16	0·37	0·53
	Central.....	24,922	5	0·20	0·41
	St. George's.....	57,069	18	0·31	0·46
II.	Cheetham	42,376	15	0·35	0·25
	Crumpsall	9,430	4	0·42	0·30
	Blackley	9,830	2	0·20	0·25
	Harpurhey	23,318	8	0·34	0 44
	Moston	20,826	5	0·24	0·36
	Newton Heath	39,153	8	0·20	0·50
	Bradford	25,355	11	0·43	0·50
	Beswick	12,588	...	...	0·46
	Clayton	14,651	...	...	0·41
III.	Ardwick	45,324	22	0·48	0·51
	Openshaw	29,040	18	0·61	0·50
	Gorton (West).....	32,316	14	0·43	0·54
	Rusholme and Kirk.	27,007	9	0·33	0·31
	Chorlton-upon-Medlock.....	55,597	10	0·18	0·35
	Hulme.....	62,629	38	0·60	0·47
	Moss Side	28,522	8	0·28	0·15†
	Withington	45,687	9	0·19	0·11†

† Average for the three years 1905–1907.

This is not only a fatal, but a most distressing disease. The difficulties are largely of the same nature as those affecting Measles.

The figures for Measles and Whooping Cough are most disquieting, and should be attended with the feeling of unrest which prevails on the subject amongst those who are acquainted with the facts. It is certain, from the experience of other towns, that neither the notification of the disease nor the provision of hospitals, however spacious, will avail alone to cope with the existing conditions.

Poor persons are indifferent in many instances. But, if so, it is because there is no escape from their troubles so far as they can see, and they have been accustomed to regard Measles and Whooping Cough as inevitable plagues.

Nor can this be altogether avoided.

The first step, however, is to bring home to the public that these are dangerous diseases which must not be treated with negligence.

The suggestion made by a member of the Committee to placard the City is one which should be considered. But it would also be necessary to have power to penalise any negligence on the part of parents in exposing sufferers in such a manner as to infect other children. How far such powers can be enforced is another matter.

It might be possible to arrive in consultation with medical men at some common advice which could be given in all cases as to necessary provision for suffering children.

Further, it is worthy of consideration whether in certain instances fuel should not be provided as an indispensable form of medical aid.

These are questions, however, which will arise in the course of the report which the Sanitary Committee have called for, and which will, no doubt, be the subject of much discussion.

SUMMER DIARRHŒA.

The following tables show the course and distribution of this condition so deadly to children under one year of age. The course followed by the mortality in 1908, as exhibited in Table 1, is a fairly normal one, of a moderate degree of severity, as will best be seen by Table 2.

1908—Table 1.

Deaths from Diarrhœal Diseases in Manchester in the weeks ending on the dates given below.

First Quarter		Second Quarter		Third Quarter		Fourth Quarter	
Jan. 4	2	April 4	2	July 4	6	Oct. 3	20
,, 11	2	,, 11	3	,, 11	6	,, 10	12
,, 18	1	,, 18	2	,, 18	9	,, 17	18
,, 25	1	,, 25	2	,, 25	20	,, 24	18
Feb. 1	3	May 2	...	Aug. 1	22	,, 31	17
,, 8	2	,, 9	1	,, 8	50	Nov. 7	6
, 15	5	,, 16	1	,, 15	83	,, 14	5
,, 22	1	,, 23	5	,, 22	73	,, 21	1
,, 29	2	,, 30	5	,, 29	57	,, 28	3
Mar. 7	3	June 6	3	Sept. 5	29	Dec. 5	2
,, 14	3	,, 13	2	,, 12	26	,, 12	4
,, 21	4	,, 20	2	,, 19	21	,, 19	4
,, 28	...	,, 27	1	,, 26	21	,, 26	...
						Jan. 2/09	...
Total...	29	Total...	29	Total ...	423	Total ...	110

City Total 591

Table 2.

The number of deaths in quarters is shown for successive years.

Diarrhœa and Simple Cholera Deaths in Quarters, 1898–1908.

	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907	Mean for 10 years	1908
First Quarter.....	55	46	41	45	33	48	34	23	32	14	**37**	29
Second Quarter...	49	53	66	32	33	49	38	31	37	18	**41**	29
Third Quarter.....	807	948	562	865	120	303	626	615	780	72	**570**	423
Fourth Quarter...	179	74	153	74	110	107	63	60	132	187	**114**	110
	1090	1121	822	1016	296	507	761	729	981	291	**762**	591

From Table 3 we see that the extent to which the death-rate from Diarrhœa in Manchester exceeded that of England and Wales, London, or the other great towns was, in 1908, not widely different from its usual amount.

Table 3.—1908.—Diarrhœa and Simple Cholera Mortality.—Rate per 1,000 living, compared with Mean of Five Years.

	1903	1904	1905	1906	1907	Mean	1908
England and Wales	0·50	0·86	0·59	0·87	0·29	**0·62**	0·50
76 Great Towns	0·71	1·20	0·83	1·16	0·40	**0·86**	0·65
London	0·64	1·04	0·73	0·94	0·32	**0·73**	0·53
City of Manchester.....	0·91	1·36	1·15	1·54	0·45	**1·08**	0·90
Manchester Township	1·41	1·86	2·09	2·62	0·77	**1·75**	1·58
North Manchester.....	0·64	1·16	1·14	1·23	0·40	**0·91**	0·67
South Manchester	0·84	1·25	0·79	1·29	0·36	**0·91**	0·77
142 Smaller Towns	0·43	1·90	0·57	0·94	0·29	**0·63**	0·52
Rural Districts	0·31	0·46	0·32	0·52	0·18	**0·36**	0·33

TABLE 4.

The following table supplies meteorological data for the third quarter of the year, the season in which the disease is most prevalent:—

Third Quarter of the years	Mean Temperature	Rainfall, Inches	Humidity, per cent.	Diarrhœa and Simple Cholera Mortality. Annual Rate per 1,000 living
1890	58°·8	8·1	74 %	2·28
1891	58°·2	12·8	79 %	1·57
1892	57°·0	12·5	78 %	2·07
1893	60°·4	10·7	74 %	4·95
1894	57°·8	9·0	78 %	1·55
1895	60°·4	11·2	77 %	4·17
1896	58°·5	9·7	76 %	2·93
1897	58°·9	9·7	73 %	6·01
1898	60°·1	6·1	74 %	6·00
1899	60°·8	7·7	75 %	6·96
1900	60°·3	9·6	78 %	4·14
1901	61°·9	6·5	74 %	6·33
1902	57°·6	5·9	78 %	0·88
1903	57°·8	12·3	77 %	2·19
1904	60°·2	6·9	73 %	4·48
1905	58°·9	9·4	76 %	3·89
1906	60°·8	6·2	75 %	4·91
1907	58°·5	7·8	77 %	0·45
Mean	**59°·3**	**9·0**	**76 %**	**3·65**
1908	59°·2	10·7	78 %	2·61

There is nothing very reassuring in these data. In 1908 the rainfall was comparatively high, and the mean atmospheric temperature for the third quarter was not high. Yet the death-rate in the third quarter was considerable. It is true it was lower by no small amount than the average death-rate for the years 1890–1907 inclusive, and it may be hoped that with the conversion of pails and middens to water-closets the improvement will continue.

The following table shows the death-rates per 1,000 living in each of the sanitary divisions and districts. The diminution in the death-rate in 1908 as compared with the average of the previous ten years is very irregular. This is least in the Manchester Township, which, in the general death-rate, shows so great a diminution.

In some districts the improvement is very striking, as for example in Harpurhey, Moston, Clayton, and West Gorton. In Harpurhey and Clayton there have been improvements in the tipping of refuse, while in West Gorton it may be permitted to connect the great reduction in the mortality with the conversion of other forms of closet into water-closets.

In one or two districts there is little or no improvement. Particularly is this noticeable in Beswick, Chorlton-on-Medlock, Hulme, and Withington.

TABLE 5.—1908.—DEATHS AND DEATH-RATES FROM DIARRHŒAL DISEASES IN THE VARIOUS DIVISIONS OF THE CITY, WITH DEATH-RATES UNDER ONE YEAR PER 1,000 BIRTHS FOR 1908, AND AVERAGE FOR PREVIOUS 10 YEARS.

	1908			Death-rates under one year per 1,000 Births											
	Estimated Population	Deaths	Death-rates	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907	Average 10 years	1908
City of Manchester ..	**648,846**	**591**	**0·99**	**46·3**	**63·7**	**35·6**	**47·5**	**13·0**	**22·1**	**34·1**	**30·8**	**39·8**	**12·2**	**34·5**	**24·0**
I. Manchester Township.	125,197	201	1·58	54·6	78·5	47·5	61·6	16·6	31·3	40·9	47·7	58·5	18·0	45·5	37·8
II. Northern Districts ...	197,527	134	0·67	37·3	57·4	24·4	42·3	10·7	15·0	30·1	31·3	30·8	10·3	29·0	17·8
III. Southern Districts....	326,122	256	0·77	46·7	58·7	36·1	43·2	12·4	22·0	33·0	22·5	36·7	10·7	32·2	21·5
I. Ancoats	43,206	77	1·76	45·3	85·0	48·6	57·4	17·1	30·2	35·4	50·9	54·9	21·0	44·6	40·8
I. Central	24,922	41	1·62	75·2	71·1	55·0	66·1	15·0	48·5	51·0	52·4	54·9	19·1	50·8	41·3
I. St. George's	57,069	83	1·43	52·8	76·7	43·4	63·3	16·9	25·5	41·1	43·3	62·8	15·3	44·1	34·3
II. Cheetham	42,376	16	0·37	22·6	36·0	18·0	27·3	9·4	10·1	10·7	18·8	19·6	7·5	18·0	10·9
II. Crumpsall	9,430	3	0·31	20·4	60·9	14·6	23·2	14·9	9·8	15·2	23·9	20·7	..	20·4	9·3
II. Blackley	9,830	3	0·30	9·8	44·2	4·4	9·2	4·0	12·1	23·5	3·8	3·5	3·7	11·8	6·9
II. Harpurhey	23,318	7	0·30	44·7	72·6	11·3	36·5	1·8	15·9	13·1	21·7	40·1	13·7	27·1	11·7
II. Moston	20,826	1	0·05	51·0	29·1	2·8	19·0	11·7	8·8	25·5	8·4	13·2	2·0	17·2	1 9
II. Newton Heath	39,153	38	0·96	37·8	57·9	25·4	49·7	12·3	15·6	31·4	43·3	36·0	16·8	32·6	22·0
II. Bradford	25,355	40	1·55	58·1	93·3	43·3	62·7	13·2	26·9	52·5	47·7	53·6	8·7	46·0	34·6
II. Beswick.....	12,588	20	1·56	23·6	46·4	40·6	50·0	20·6	8·4	60·8	43·2	23·0	19·0	33·6	37·6
II. Clayton	14,651	6	0·40	61·6	66·7	36·4	94·9	6·2	20·2	38·4	40·1	41·2	7·8	41·4	9·8
III. Ardwick	45,324	42	0·91	50·2	61·7	43·7	48·4	11·5	20·0	38·5	28·7	42·8	12·8	35·8	29·0
III. Openshaw	29,040	35	1·19	58·5	64·3	44·7	48·1	14·2	27·4	28·0	23·9	50·0	8·2	36·7	24·7
III. West Gorton	32,316	24	0·73	69·3	85·7	52·6	58·4	21·2	31·1	47·2	35·1	60·0	28·5	49·0	19·6
III. Rusholme and Kirk ..	27,007	13	0·47	43·7	34·0	15·4	33·3	11·6	14·0	12·7	10·5	21·2	2·4	19·9	11·1
III. Chorlton-on-Medlock .	55,597	42	0·74	32·8	58·7	25·1	17·9	7·1	23·9	23·8	29·1	32·8	13·7	27·5	25·9
III. Hulme	62,629	87	1·37	40·6	49·5	33·1	43·6	12·0	18·7	39·2	22·3	33·6	10·8	30·3	28·3
III. Moss Side	28,522	2	0·07	..	..	..	..	..	..	..	3·5	29·8	1·7	11·7†	1·6
III. Withington	45,687	11	0·24	..	..	..	..	..	..	..	11·2	19·4	2·2	10·9†	10·3

† Average for Three years.

By what means are we to cope with the excessive death-rate from Diarrhœa ? The subject is a complicated one, and has already been the subject of considerable discussion in these Annual Reports. There are, however, various directions in which advance is indicated :—

1. The conversion of pails and middens to water-closets (in progress).

2. The enforcement of the bye-laws requiring all collections of horse manure to be removed within a week.

3. The prompt removal of collections of vegetable and other garbage from the vicinity of houses.

4. The provision and maintenance of clean surfaces inside the City ; the abolition of tips for domestic refuse, if practicable.

5. More care bestowed on the instruction of mothers in matters pertaining to the care of infants, and the enforcement of the instructions given.

6. The education of older girls and young women in a knowledge of the elementary requirements of infants (and young children). Such education is also required in any effort to cope with Measles and Whooping Cough.

AN OUTBREAK OF POISON BY ARSENICAL SWEETS.

By Dr. J. R. Hutchinson.

In accordance with a desire expressed by the Sanitary Committee when a report on this outbreak was presented by the Medical Officer of Health, along with a very exhaustive report by Professor Delépine, in which the investigation was carried as far as analysis could take it, the subjoined statement is given in this Annual Report. It is prepared by Dr. Hutchinson, who gave valuable assistance in the conduct of the inquiry. In the course of the inquiry we had the advantage of a visit from Dr. Hamill, one of the Inspectors of the Local Government Board, who made himself fully acquainted with all the details available.

On April 3rd and 4th, 1908, two letters were received by the Medical Officer of Health from the head masters of two city schools stating that several of their scholars had been violently sick soon after eating a certain kind of sweet.

In one school, ("A") 24 children had been taken ill, whilst in the second school ("B") 9 children were affected. With the letters were sent two packets of the suspected sweets, one from each school, and the names of the shopkeepers from whom they were obtained were given.

The samples enclosed consisted of a number of irregularly-rounded hard brown sweets, each somewhat larger than a marble. Some of them were quite dry, and coated with a light brown powder; whilst others were sticky, and were dark in colour. The retail price was 4 oz. for 1d. One ounce contained from 10 to 11 sweets. After a cursory examination, both samples were submitted to Professor Delépine for analysis.

On April 6th Professor Delépine reported verbally to the Medical Officer of Health that many of the sweets contained "a large amount of arsenic."

On April 7th the Medical Officer of Health visited the manufacturer, acquainted him with what had taken place, took samples of the raw material of which the sweets were made, and requested that, pending a chemical analysis, no more of these materials should be used. The manufacturer then informed the Medical Officer of Health that the two shops from which the sweets apparently responsible for the illnesses at schools "A" and "B" were bought were supplied from a consingment manufactured on the 24th March, and delivered to six shops and one middleman in the city some time between the 25th and the 27th of that month. He further stated that he, too, had had a complaint from one of the shops that the sweets had caused sickness amongst the scholars of a third school ("C"), and that he had in consequence been round to the six shops supplied and recalled the whole consignment. All the recalled sweets (eleven 7-lb. boxes) were handed over to the Medical Officer of Health, who retained one box, and sent the others on to Professor Delépine.

The names and addresses of the six shopkeepers and the middleman from whom the sweets had been recalled were obtained.

The schools "A" and "B" were visited, and the history of thirty-three cases of illness were investigated. At school "C" fourteen cases were enquired into. Three of the six shops on the list supplied by the manufacturer are those accounted for as being responsible for the illnesses at schools "A," "B," and "C"; the other three were visited, as was the middleman. This latter dealer had supplied the sweets to four other shops, so that, in all, seven remained to be dealt with. These seven were visited in turn, and it was found that in three instances the boxes had been recalled unopened, and in two others, although the boxes had been opened, none of the sweets had been sold. In the case of the sixth shop four halfpenny-worths had been sold, and so far as the shopkeeper knew had been consumed without any ill effects; whilst the seventh shop was found to be responsible for the illness of nine children at a fourth school, "D."

The four shops from which the sweets causing the illness at schools "A," "B," "C," and "D" were obtained are in close proximity to the respective schools and may be regarded as regular school tuck shops, whilst the only

other shop at which the sweets are known to have been bought is not situated near a school. It is quite possible, therefore, for the sweets bought here to have been the cause of illness without the cases coming to light, for, as will be seen later, in none of the known cases was a medical man called in.

In all, sixty-two cases of poisoning are known to have occurred—fifty-six in children attending the schools "A," "B," "C," and "D," five in children under school age, and one in an adult—the mother of one of the affected children.

The number of sweets consumed was usually small—one, two, three, or four. Eleven purchases, nine of 2 ozs., one of 4 ozs., and one of 1 oz., were responsible for forty-eight of the sixty-two recorded cases. What commonly happened was that when a child found that the sweets made him ill, he passed them on to some of his friends, who in turn disposed of them in the same way. The smallest quantity known to have been eaten was half a sweet, whilst the largest quantity was twenty sweets (halfpenny worth). In both cases severe vomiting ensued. The effects left after eating a large quantity do not appear to have been more severe or lasting than those experienced from a small number.

In nine instances only one sweet was eaten; in six there was vomiting, in two the children were ill but did not vomit, and in one case the child was not ill.

In eleven instances two sweets were eaten, ten of the children were sick, one was not sick.

In six instances three sweets were eaten, five of the children were sick, one was not sick.

In four instances four sweets were eaten, and all the children were sick.

In thirteen cases more than four sweets were eaten, and all the children were sick.

Various periods elapsed between the eating of the sweets and the onset of symptoms. Most commonly the interval was about an hour; in some cases, however, the illness came on almost immediately, whilst in others it was delayed one-and-a-half to two hours. In all cases the onset was sudden, some of the children vomiting in school before they had time to leave the room. As a rule the only symptoms were vomiting, and less frequently, abdominal pain; after the stomach was emptied the children became quickly well. In some instances there was purging; in one or two there was a general feeling of illness with giddiness. The most striking feature was the rapid and apparently entire recovery of the children, either during the same day or by the next morning. This is illustrated by the fact that of all the children affected only six missed any school period, five of these were absent for half-a-day, whilst one child was away two days.

In forty-six cases vomiting was the main symptom. It occurred in seven cases within fifteen minutes of eating the sweets, in four more within thirty minutes, in eleven more within forty-five minutes, in ten more within sixty minutes, whilst in fourteen cases it was delayed over an hour. There was abdominal pain in twenty-two cases, purging in nine, headache and dizziness in six.

Boys and girls were alike affected, and only four children are positively known to have eaten sweets without any ill effects. Of these four, two ate two sweets each, and two ate one sweet each. An adult who ate two sweets was violently sick, whilst a pet dog which ate one also vomited.

That the symptoms were due to the ingestion of an irritant poison contained in the sweets in sufficient quantity to cause almost complete expulsion is proved by the facts that :—

(1) They were those of an irritant poison.

2) They occurred only in those children who had eaten this particular kind of sweet.

(3) No further illness occurred after the recall of the sweets.

4) The illnesses were all transitory. After vomiting, the sufferers were quickly well again.

That the irritant poison was arsenic is proved by the facts that :—

(1) Arsenic was found by Professor Delépine in the sweets in sufficient quantity to account for all the symptoms;

(2) No other poison was detected in them; and

(3) Arsenic was found in the urine of four of the sick children seven days after the sweets were eaten.

The fact that four children ate the sweets without their giving rise to any symptoms in no way militates against the general conclusions, for, as Professor Delépine's subsequent investigations showed, some of the sweets contained the poison whilst others did not.

By the time the clinical investigations were completed an extended report by Professor Delépine on the analysis of the two packets of sweets obtained from the schools "A" and "B," and on the boxes of sweets recalled by the manufacturer, was at hand. Of the two packets Professor Delépine says: "The first contained 27 sweets, six of these were light-brown in colour, and looked hard and dry. Of these six, three were almond-shaped, and three were irregularly rounded. These latter three resembled the remaining 21, except

in point of dryness; the 21 were dark-brown and sticky, they adhered to one another and to the paper. There were about 175 sweets to the pound." The second packet, the report goes on to say, "contained sweets having the same character as the bulk of the sweets in the first packet; there was, however, a larger proportion of small sweets, there being about 198 to the pound."

Several sweets were analysed and found to contain a large amount of arsenic. It was then observed that the six dry hard sweets in the first packet contained no appreciable amount of arsenic, whilst all the moist sticky ones were heavily loaded with the poison. Further, the arsenic was uniformly distributed throughout each of the sticky sweets, the central harder portion and the superficial softer portions containing about equal amounts. One section, Professor Delépine was unable to detect any mass of white arsenic or any recognisable crystals. He estimated that the quantity of the poison present was not less than 13 parts per 10,000, *i.e.*, a little over 9·1 grains per lb., so that some of the larger sweets which weighed $\frac{1}{10}$oz. contained probably not less than $\frac{1}{20}$ grain of arsenic.

The presence of this quantity of arsenic fully explains the symptoms, and explains, too, the rapidly induced vomiting. This prompt ejection of the poison would appear to have saved the children.

From Professor Delépine's examination of the two packets of sweets it is obvious that two varieties were being dealt with: the one dry, hard, light-brown in colour and non-arsenical; the other moist, soft, sticky, dark in colour, and containing approximately $\frac{1}{20}$ grain of arsenic per sweet. When the contents of the eleven recalled boxes came to be examined it was found that five of them contained sweets of the first description, four those of the second, whilst the other two contained a mixture of both kinds, some poisonous, others non-poisonous. The smell of the two types of sweet was quite different.

The amount of arsenic present, as found by Professor Delépine using the Delépine-Reinsch method, varied from 8·4 to 11·2 grains per lb.

How does it happen that almost exactly one-half the number of recalled boxes contained the poisonous sweets and the other half the non-poisonous ?

As before stated, all these sweets were made on the 24th March. On further inquiry it was ascertained that two boilings of this particular sweet were made on that date. It might reasonably be assumed, therefore, that only one boiling contained the poison. Now one boiling weighs approximately 44lbs. From two such boilings, therefore, 88lbs. of sweets or twelve 7lb. boxes ought to have been made. According to Professor Delépine's analysis, five of the boxes submitted to him contained wholly poisonous sweets, whilst two contained the mixed poisonous and non-poisonous ones. The former were, however,

much more numerous than the latter variety. The total weight of the seven boxes was 49lbs., and if 5lbs. be allowed for the non-arsenical sweets in the two mixed boxes we get 44lbs. of poisonous sweets; this corresponds to one boiling.

The average amount of arsenic found was 10–11 grains per lb. of sweets. This means something like one ounce of the poison in the contaminated boiling.

The ingredients that go to make up one boiling were said to be glucose 10lbs., cane sugar 30lbs., starch 6lbs., and in addition a little cocoa shell powder and water.

What was the source of the arsenic ?

Several possibilities have to be considered. (1) One of the ingredients may have contained arsenic as a result of its process of manufacture, as, *e.g.*, happened in the beer poisoning outbreak in 1900. (2) The poison may have been introduced with one of the ingredients having accidentally got into one of the packages. (3) It may have been accidentally introduced by some vessel or instrument previously used to contain arsenic or an arsenical compound, or (4) it may have been introduced by design.

To understand what possibilities exist, if any, of these occurrences, it is necessary to know how the sweets are made.

A cask of glucose which weighs 5 cwts. is kept in the boiling room, as are sacks of starch and sugar, which when full weigh 2–2½ cwts. apiece. The pans used are four in number; they are heated over coke fires. The staff consists of one man, an employé of 25 years' standing, and three girls. The man is the actual "sugar boiler," whilst the three girls take each of them a part in every operation, as occasion requires. They usually mix the charge of glucose, sugar, etc., stir the pots, knead in the starch, pull the mass, roll it (that is to say, mould the sweets), and then break them up.

Thirty lbs. of cane sugar go to one boiling. This is scooped out of the sack with a vessel used for the purpose, and kept in the sack. It is put on to a scale pan and weighed out; a hole is then made in the summit of this pile of sugar on the scale pan, and into it is placed 10lbs. of glucose.

The glucose is taken out of the cask by a girl, who picks it up in her hands after dipping them in water, rolls it in a ball in order to free it from her fingers, and then places it in the hole made in the sugar on the scale pan.

Roughly, 10lbs. of glucose are added.

When the glucose cask is getting empty it is reared on edge against the wall so as to enable the girl to reach the bottom. This, of course, involves the burying of her head, arms, and shoulders in the cask. The contents of the scale-pan are transferred to the boiling pan, and two quarts of water are added

by means of a lading can. The mixture is then heated over a coke fire to 280° F., at which temperature it is kept for 20 minutes. At the expiration of this time it is poured out on to a cooled metal slab greased with cocoa butter. When it has cooled sufficiently to allow of manipulation, 6lbs. of starch are added to the mass and kneaded into it. The starch is added by means of a scoop kept in the starch sack. After kneading, pieces of the plastic mass are cut off and pulled by hand over a hook with the effect of lightening the colour. The pulled sweet is then passed between rollers, the opposing surfaces of which are hollowed out to mould the individual sweets. The sweets are then separated by breaking up the rolled cake. Any residue which may remain is swept up and put in a tin under the table to be added to the next boiling. The sweets are then dusted over with cocoa-shell powder and packed away in 7lb. boxes. This, it was said, is the invariable routine.

At his visit to the factory on April 7th, the Medical Officer of Health was given the most positive assurances that no materials other than those ordinarily used had been used for the making of the sweets on the 24th March, that no difference had been made in the two boilings of that date, and that since that date, or even before it, no raw materials have been removed from the premises. The manufacturers stated that if anything unusual had occurred in connection with the particular boilings on the 24th March they would have been informed of it; they further stated that, so far as they knew, no arsenic or substance likely to contain arsenic was, or ever had been, on their premises. In short, they professed themselves utterly unable to account for the occurrence, and expressed their willingness to do all in their power to assist in clearing the matter up. The appearance of the sweets, and the fact that they contained a large amount of glucose, suggested to Professor Delépine the possibility that a highly arsenical glucose might have been used in their manufacture. It was found that there were on an average ten sweets to the ounce, each containing approximately $\frac{1}{20}$grain of arsenic. This is equivalent to eight grains of arsenic per lb., so that every pound of glucose used in boiling—assuming glucose to be the source of the poison—must have contained something like 35 grains of arsenic. This is far in excess of the quantity of arsenic found in the glucose which was responsible for the outbreak of beer poisoning in 1900. In this material the largest quantity of poison found by Professor Delépine was $6\frac{1}{2}$ grains per lb., whilst Professor Campbell Brown found as much as 9 grains per lb. Professor Delépine states, however, in his report that, considering the fact that some of the sulphuric acid used in the manufacture of arsenical glucose contained a heavy precipitate of almost pure arsenic, it is quite possible that some of the samples of glucose may have contained very much larger quantities of arsenic than either Professor Campbell Brown or he disclosed. It appeared, therefore, that the introduction of arsenic by means of arsenical glucose was a possibility.

The samples of glucose, sugar, starch, and cocoa-shell powder first obtained were not taken from the same packages as the materials used in the boilings of March 24th ; they were, however, from the same consignments. It must be remembered that fully 14 days had elapsed between the date of making of the poisonous sweets and the notification to the Medical Officer of Health of the first cases of illness. All that remained, therefore, of the packages from which the ingredients used in the boilings of the 24th March had been used as some days previously. Nevertheless, samples of these materials were submitted to Professor Delépine, who pronounced them free from arsenic.

We may suppose that the arsenic was introduced as part of a sack of starch. Against this is the fact that only one pantul of sweets was affected, and this could only have happened if the poison had been collected from the bottom of a sack, which is unlikely. Professor Delépine was unable to find any crystalline arsenic in the sweets, and, besides, both the contaminated and uncontaminated sweets were found to contain the same amount of starch. The poison could not have been introduced with the brown cane sugar without attracting attention as a white powder. The cocoa-shell powder with which the finished sweets are dusted over can be dismissed at once, as it was found that the centre of the contaminated sweets contained as much arsenic as the outer portions.

It is thus very unlikely that the poison was introduced as an accidental contamination of any of the ingredients in bulk.

The idea of the poison having been accidentally introduced through the medium of some vessel or utensil previously used to contain arsenic, or one of its compounds, may probably be dismissed.

It was impossible to examine the sacks used to contain starch and sugar, as they had been returned to the respective dealers in those articles, nor was it any use examining the pans, as they are used over and over again every day

The possibility of the transference of arsenic by rats was considered, and was excluded.

In all, 29 samples of materials, including sweets of various kinds, glucose, starch, sugar, rat poison, dust, soot, bicarbonate of soda, tartaric acid, etc., were submitted to and examined by Professor Delépine, and were without exception found to be free from any material amount of arsenic.

A consideration of all the particulars appeared to suggest that the most likely suppositions were, either that some highly arsenical glucose had been used or that arsenic had been added to one panful of the sweets. To take the latter suggestion first. If as much as one ounce of arsenic had been thrown into the pan whilst the mixture was boiling, or whilst the ingredients were being mixed, one would not have expected the poison to be so uniformly

distributed through the sweets as was found to be the case. This point, too, was tested experimentally by Professor Delépine. In the contents of two pans made in accordance with the formula given by the manufacturers, and with their own ingredients, he added arsenic in the one case before boiling, and in the other case 15 minutes before the end of the boiling. In both cases he obtained hard dry sweets closely resembling the non-poisonous variety found in the recalled boxes. He was unable to find with the naked eye, or by means of the microscope, any trace of the poison, although the powder added contained fine octabedral crystals of arsenious acid.

Arsenic *per se*, therefore, does not render the sweets sticky.

There were marked differences in appearance between the poisonous and non-poisonous sweets. The poisonous ones were smaller and denser than the non-poisonous; they were moist and sticky, whereas the non-poisonous ones were dry and even dusty. When melted, the arsenical sweets gave a pale liquid and a dark sediment. The non-arsenical ones gave a dark liquid and a light sediment.

If then, as asserted by the manufacturers, they were all made according to the same recipe, and with the same materials and rollers, the mass passing through the rollers must have been very different. But it was found that the contaminated sweets contained twice as much reducing sugar as the non-contaminated. They were not, therefore, both made according to the formula given by the manufacturers to the Medical Officer of Health.

Would the presence of this excess of reducing sugar render the sweets soft and sticky? Professor Delépine was able to show without doubt that it would.

We have therefore to consider whether, along with an excess of glucose introduced into one boiling of the sweets there was also the introduction, accidental or by design, of a large quantity of arsenic.

If glucose was the source of the poison, how was it that only one panful of sweets was affected? Assuming that an experimental trial was made with a new sample of glucose just sufficient for one boiling, then this sample must have contained about one ounce of arsenic.

Confectioners' glucose is supplied mainly by two large firms in this country, one an English and the other an American company. The glucose in this instance was said to have been supplied by the American firm. Control samples

of their glucose were found to be arsenic free. Besides, no special precautions were taken by this firm when they were informed of these cases of poisoning, and the Local Government Board have no knowledge of any further cases occurring elsewhere.

The presence of a double quantity of glucose plus arsenic in the sweets, then, might have been a mere coincidence. If so, it was a very remarkable one.

In view of the conflict of evidence as to the composition of the sweets, the manufacturer was again interviewed. He adhered absolutely to his former statements as to the composition of the sweets and the sources of the raw materials. Amongst other questions he was asked :—

1. Were all these sweets made with the same mould ? If so, how is it that although the arsenical sweets are denser than the non-arsenical ones, there are at least 23 more of the latter to the pound than of the former ? The first part of the question was answered in the affirmative, whilst he professed himself unable to account for the differences in weight.

2. Were the sweets by any chance obtained from an outside source ? Answered in the negative.

3. How does he account for the difference in smell of the good and bad sweets. Answered he was unaware of it.

4. Did he observe any moist appearance about any of the boxes when he packed the sweets ? Answered in the negative.

5. Has he questioned the "sugar boiler" as to whether any unusual circumstance had been observed about this panful of sweets ? Answer: Yes, nothing had been noticed.

6. Was arsenic or any substance which might be suspected of containing arsenic kept on the premises ? Answer: No.

The manufacturer repudiated the suggestion that some arsenical substance might have been removed from the premises. He stated, too, that absolutely no change had been made in the personnel of the establishment since this occurrence, nor had the routine work been altered in any way.

It follows from this that either the manufacturer himself was being grossly deceived or was not telling the truth.

These enquiries are incomplete, in so far as they do not settle the question of how the arsenic got into the sweets. They do show beyond doubt that the composition of the sweets was not in accordance with the recipe given

One can only suspect that this is not the only particular in which misleading statements were made, and that material facts were being suppressed.

The outbreak is important, not only on account of the very large total amount of poison present, but as showing also the precise effect of known poisonous doses of arsenic on 62 different individuals. The usual medicinal dose of arsenic is equivalent to that contained in one of the contaminated sweets, but many of these children ate four, six, eight, ten, or more. One child certainly ate 20 sweets within $3\frac{1}{2}$ hours; she was violently sick. In this case, too, the sweets were obtained from a mixed box of contaminated and uncontaminated ones. The former certainly outnumbered the latter, but it is impossible to gauge the total amount of arsenic which the child consumed. Curiously enough this was one of the children who missed no school period.

The outbreak further brings into sharp contrast the difference between acute and chronic arsenical poisoning. In the one case you get vomiting and diarrhœa, with rapid and complete recovery; whilst in the other you get the symptoms of a cold in the head, with anæmia, pigmentation, tingling in the hands and feet, muscle atrophy, and extreme helplessness, which lasts for months, and perhaps a fatal result.

TUBERCULOSIS.

We have already seen how great has been the lowering of the general death-rate at all ages, viz., from 23·28 per 1,000 in the years 1891–1900 to 18·83 per 1,000 in the year 1908.

The reduction of the death-rate from Phthisis has not kept pace with this. The mean death-rate for the years 1891–1900 from Phthisis was 2·08; in 1908 it was, for the same area, 1·74. A sharp diminution in the Phthisis death-rate occurred in 1903, which has since been maintained.

For several years prior to 1903, however, the death-rate showed signs of increase.

Deaths from Phthisis occur partly at home, partly in institutions, especially in Union hospitals. It is possible that the last portion is produced to no inconsiderable extent outside the City. Nevertheless, by far the greater part is of internal origin. Males have a much higher death-rate in our large towns than females. This is, no doubt, in part due to conditions of work. Partly

it is also due to the herding of large numbers of men in common lodging-houses. But, in my view, there are two outstanding factors which cannot be neglected—drinking in public-houses and spitting at work.

The essential factor in both would, in my view, be expectoration of tuberculous matter.

Women do not expectorate at work as men do, nor do they sit and expectorate in public-houses.

Both men and women undergo home infection; men less than women, since women nurse the men, make the beds, and so forth. Hence, more wives are infected from husbands than husbands from wives.

Excessive Death-Rate among Males.

The excessive incidence on men in our great towns is largely due to expectoration in the workshop and at the public-house. These views were expressed in the course of an address given at the Industrial Section of the British Medical Association in 1902. In the July number of *Public Health*, 1909, are published statistics relative to the mortality from Phthisis and other forms of Tuberculosis, collected by Dr. Scurfield from a number of large towns and metropolitan boroughs. Dr. Scurfield gives the death-rates from both males and females, and invites opinions as to the causes of their difference. These tables are valuable, but it is not easy to give an adequate explanation of the figures, and at present I am not prepared to add to my previous statements.

Dr. Scurfield's statistics show that Manchester had in the ten years 1898–1907 by far the highest male death-rate from Phthisis of all the great towns.

The female death-rate, however, is lower than that in Dundee and Glasgow, and not much higher than that in Aberdeen. Although the male death-rate for those years is much higher than the male death-rate in Liverpool, the female death-rate is not much higher. It is possible, therefore, that Dr. Scurfield is right when he suggests that the relatively high female rate in those towns is due to housing conditions.

Before giving a positive answer to the question what is the cause of the excessive Phthisis male death-rate in Manchester it would be necessary to give an exhaustive study to the effects of occupation, and also to the possible effects of the public-house. At present, no satisfactory means have been discovered of assessing the influence of the latter factor.

Some information may be obtained from a table showing the death-rates in different parts of the City over a series of years.

Table I.

Death-rates from Phthisis.

Statistical Divisions	Mean Death-rate 1891-1900	1901	1902	1903	1904	1905	1906	1907	Average 1901-1907	1908
ty of Manchester.....	2·08	2·09	2·08	1·85	1·98	(1·68) 1·56	(1·81) 1·71	(1·80*, 1·70	1·90	(1·74) 1·65
Manchester Township ..	3·22	3·49	3·54	3·00	3·14	3·00	2·99	3·09	3·18	2·79
North Manchester	1·26	1·21	1·26	1·05	1·23	0·96	1·03	1·16	1·13	1·08
South Manchester	1·90	1·93	1·86	1·79	1·90	1·33 (1·53)	1·59 (1·79)	1·47 (1·64)*	1·78	1·56 (1·75)
Ancoats	2·67	2·82	3·17	2·43	2·26	2·78	2·48	2·82	2·68	2·19
Central	3·70	4·43	4·34	3·68	4·35	3·58	4·28	3·85	4·07	3·16
St. George's	3·37	3·52	3·42	3·09	3·23	2·89	2·79	2·95	3·13	3·09
Cheetham.....	1·16	0·99	1·05	0·80	1·11	0·87	0·78	1·06	0·95	1·07
Crumpsall	1·03	1·02	0·45	0·99	0·44	0·43	0·65	1·28	0·75	0·63
Blackley	1·18	2·14	1·33	0·98	1·61	1·59	0·94	1·15	1·39	1·30
Harpurhey	1·21	1·01	1·49	1·50	0·69	0·65	1·24	1·31	1·13	0·80
Moston	0·89	1·07	1·22	0·63	1·17	1·08	0·72	0·78	0·95	0·76
Newton	1·51	1·46	1·29	1·27	0·80	0·79	1·19	1·47	1·18	1·18
Bradford	1·35	1·18	1·62	1·23	1·30	1·29	1·40	1·31	1·33	1·40
Beswick	1·30	1·37	1·27	1·08	1·57	1·31	1·37	0·88	1·26	0·86
Clayton	1·02	0·72	1·33	0·71	0·94	0·95	0·72	0·81	0·88	1·48
Ardwick	1·67	1·54	1·62	1·62	1·78	0·98	1·81	1·52	1·55	1·28
Openshaw	1·25	1·24	1·16	1·33	1·35	1·06	0·80	1·35	1·18	1·32
West Gorton	1·65	1·43	1·61	1·58	1·53	1·38	1·65	0·94	1·45	1·31
Rusholme and Kirk. ..	1·10	1·61	1·82	1·10	1·00	1·00	1·18	1·27	1·28	1·49
Chorlton-upon-Medlock	2·09	2·38	1·85	1·76	2·47	1·90	2·18	2·02	2·08	2·12
Hulme	2·39	2·36	2·44	2·50	2·26	2·07	2·19	2·04	2·27	2·28
Moss Side	..	..	..	..	..	0·75	1·00	0·99	..	1·14
Withington	..	..	..	..	..	0·50	0·84	0·83	..	0·80

* Exclusive of Moss Side and Withington.

Death-rates in the Districts.

It will be seen from this table—whether we take the figures for 1891–1900, or for 1901–07, or for 1908—that great differences exist between the different districts. The death-rate in the Manchester Township is not far from being three times that in North Manchester, while South Manchester occupies an intermediate position.

Unquestionably this difference is largely due to social factors. But the great excess in Central Manchester is partly due to crowding in common lodging-houses.

In spite of the general poverty of light from which we suffer, and the damp nature of the soil, the high death-rate from Phthisis cannot be said to be due to the influence of the atmosphere and of the soil, since in districts not favourably situated in these respects, such as Harpurhey, Moston, Newton, Bradford, Beswick, and Clayton in North Manchester, and Rusholme and Moss Side in South Manchester, the death-rate is comparatively low.

Again, in face of the comparatively low death-rates in Newton and Clayton, it is difficult to believe that work is a potent factor, or even that public-houses take a prominent part in producing Phthisis.

Hulme and Chorlton-on-Medlock suffer from the manner in which the houses are crowded together in the rear.

The excess of Phthisis in Central and St. George's is undoubtedly due to the number of common lodging-houses in those districts, which serve as the portals to the Union Hospital. The extent to which this is the case could be ascertained.

These figures would seem to show that there is retrogression in the Ancoats and Central districts, but the figures for 1908 are so much lower than in any previous year that this view cannot be maintained.

It is difficult to draw conclusions from the data for small districts unless these cover a considerable period. There is, however, taking the Manchester Township as a whole, a considerable fall in 1908 of the Phthisis rate in this portion of the City.

North Manchester and South Manchester continue to show a slight improvement.

In only one district in North Manchester is there decided retrogression, viz., in Blackley; and only in one in South Manchester, viz., Rusholme.

Rusholme is easy to account for by the new population which has spread over its area. Blackley one cannot so easily explain. The population, however, is small and the death-rate fluctuating, and it may be that the rise in the death-rate is only temporary.

Other forms of Tubercular Disease,

here are, however, forms of Tubercular disease having a fatal termination other than hisis, and in these the progress achieved is much more rapid.

his will be manifest from the following table. To understand what this may be taken to ly, it is to be remembered that other forms of tubercular disease are fatal chiefly in ng people.

ow, young people contract Tubercular disease partly from older persons and partly from consumption of tuberculous milk. If, therefore, the notification of Phthisis is doing d in households, and the good which can be effected is chiefly through advice to ilies, it should have an effect on these figures. If infection through milk is being rted, it should be visible in these figures.

n a measure, then, this table may be taken as testing the efficiency of both branches of Tuberculous work, and here there is no doubt at all about the immense improvement ch has occurred in every district of the City.

Table 2.

give a similar table for Tubercular disease other than Phthisis.

Death-rates from Tubercular Diseases other than Phthisis.

Statistical Divisions	Mean Death-rate 1891-1900	1901	1902	1903	1904	1905	1906	1907	Average 1901-1907	1908
y of Manchester.....	0·90	0·78	0·71	0·76	0·69	0.56	0·61	0·56	0·67	0·59
Manchester Township ..	0·99	1·14	0·89	0·95	0·79	0·69	0·87	0·76	0·87	0·83
North Manchester	0·60	0·42	0·47	0·41	0·41	0·42	0·37	0·36	0·41	0·36
South Manchester	1·03	0·82	0·77	0·90	0·82	0·58	0·65	0·62	0·74	0·64
Ancoats	1·03	1·44	0·98	0·92	0·91	0·82	0·99	0·90	0·99	1·03
Central	1·03	0·97	0·89	0·70	0·54	0·59	0·95	0·86	0·80	0·71
St. George's	0·95	1·02	0·84	1·11	0·85	0·65	0·74	0·62	0·83	0·72
Cheetham.....	0·41	0·27	0·37	0·26	0·35	0·37	0·22	0·10	0·28	0·35
Crumpsall	0·60	0·23	0·34	0·33	0·22	0·11	0·22	0·32	0·25	0·31
Blackley	0·73	0·34	0·00	0·00	0·54	0·64	0·21	0·21	0·28	0·30
Harpurhey	0·93	0·76	0·53	0·34	0·42	0·45	0·67	0·50	0·52	0·34
Moston	0·57	0·66	0·30	0·42	0·65	0·18	0·11	0·62	0·42	0·33
Newton	0·52	0·47	0·49	0·57	0·27	0·39	0·29	0·36	0·41	0·33
Bradford	0·75	0·42	0·58	0·49	0·49	0·69	0·68	0·52	0·55	0·50
Beswick	0·75	0·43	0·68	0·67	0·49	0·33	0·57	0·32	0·50	0·39
Clayton	0·68	0·24	0·78	0·51	0·56	0·61	0·40	0·44	0·51	0·34
Ardwick	1·30	0·80	0·74	0·94	1·02	0·98	0·75	0·60	0·83	0·70
Openshaw	1·12	0·84	0·80	1·11	0·99	0·78	0·73	0·66	0·84	0·58
West Gorton	1·12	0·75	0·67	0·76	0·81	0·64	0·73	0·66	0·72	0·82
Rusholme and Kirks...	0·84	0·97	0·91	0·86	0·46	0·58	0·49	0·75	0·72	0·47
Chorlton-upon-Medlock	0·83	0·66	0·69	0·77	0·67	0·58	1·10	0·54	0·72	0·64
Hulme	1·03	0·96	0·87	0·97	0·92	0·83	0·92	0·96	0·92	0·68
Moss Side.....	..	..	..	..	..	..	..	0·25	..	0·76
Withington	..	..	..	..	..	..	..	0·36	..	0·47

urning again to Dr. Scurfield's tables, we find that Manchester for the years 1896 to 7 had for these forms of tubercular disease a lower mortality than Leeds, Norwich, ford, Sunderland, Dundee, Edinburgh, and Glasgow, although the male Phthisis ath-rate is much higher than for any of them.

Death-rates in Groups of Ages.

We may get a clearer idea of the incidence of Phthisis by constructing a table showing, year by year, the death-rates in groups of ages. It is not to be expected that at each age there will be the same steadiness maintained as holds in the case of the death-rate at all ages.

The figures for the years 1901–08 are as follows for males and females :—

Table 3.—City of Manchester—Death-rates from Phthisis.

Year	Males						Females					
	All Ages	0–5	5–15	15–25	25–45	45–65	65+	All Ages	0–5	5–15	15–25	25–45	45–65	65+
1901	2·54	0·16	0·21	1·41	4·16	6·39	2·37	1·67	0·40	0·59	1·46	2·75	2·38	0·97
1902	2·60	0·19	0·43	1·31	3·87	6·81	4·71	1·59	0·40	0·41	1·40	2·61	2·39	1·49
1903	2·40	0·52	0·30	1·38	3·68	5·79	3·43	1·34	0·15	0·44	1·19	2·14	1·96	1·80
1904	2·56	0·52	·0·38	1·66	3·83	6·08	3·56	1·44	0·27	0·37	1·53	2·17	2·43	0·94
1905	1·99	0·42	0·30	1·36	2·76	5·06	2·06	1·17	0·30	0·41	1·11	1·78	1·76	0·70
1906	2·24	0·28	0·13	1·27	3·46	5·61	3·32	1·22	0·36	0·41	1·20	1·83	1·83	0·69
1907	2·30	0·47	0·19	1·23	3·49	5·75	3·42	1·15	0·22	0·32	1·09	1·68	1·98	0·86
1908	2·12	0·52	0·34	1·28	3·26	4·81·	2·77	1·26	0·32	0·34	0·94	2·16	1·84	1·02

Death-rates among Children.

We see that in childhood boys suffer more than girls. At school ages girls have the highest death-rates. At every other age males suffer far more heavily than females. But it is after the age of 45 that men in Manchester have the high death-rates which cause the mortality in males to be so much higher than in females. The difference, however, is also very marked at ages 25–44. This is the first step towards an explanation of the excess in the male death-rate. Attention has previously been called to this point, and the decline in the male Phthisis death-rate is marked at every age, but is most marked at ages above 45 and from 0–15.

In females it is most marked at ages 15 and upwards.

At ages 0–5 there is retrogression in 1908, and also in males at 5–14. Is this due to the larger proportion of tuberculous milks coming in, or to poverty, or both ?

When similar tables are constructed for other towns, and for the main divisions of the City, especially if Institution deaths are separated out, we shall get nearer to the point at which we may get to close quarters with the high Phthisis mortality.

Causes of Decline of Death-rate in Manchester.

There can be little doubt that the steady recession of Phthisis in Manchester of recent years is largely due to the work carried on from the Public Health Office in connection with the voluntary notification of Phthisis. A great process of instruction, guidance, and aid is carried out in households from which cases are notified.

Through the action of the Police in common lodging-houses, of the Tramways Committee in connection with spitting in cars, and of the Public Health Office in connection with workshops, there is now a far higher standard of cleanliness than formerly existed.

The operations carried out under the Voluntary Notification of Phthisis are set forth in the following tables:—

TABLE 4.

PHTHISIS, 1908—NUMBER OF CASES NOTIFIED.

Year	Poor-law Cases	Institutions	Private Practitioners	Total
1900	578	455	540	1573
1901	625	373	341	1339
1902	667	305	303	1275
1903	556	550	251	1357
1904	512	440	250	1202
1905	527	588	291	1406
1906	565	510	304	1379
1907	634	646	310	1590
1908	659	498	346	1503
Total	5323	4365	2936	12624

The following table shows the number of cases of Phthisis notified in 1908, referred, in the case of Union Hospitals, to the districts from which they have come. These notifications are given also in quarters, and side by side with the total number of notifications is the number of deaths referred to the district, and also the death-rate.

Table 5.—Phthisis, 1908.

		Cases Notified					Deaths	Death-rate	Notification
		First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Total	1908	Per 1000 living	Rate per 1000
City of Manchester		**388**	**338**	**360**	**414**	**1500**	**1088**	**1·65***	**2·28**
I.	Manchester Township	207	149	167	168	691	355	2·79	5·43
II.	North Manchester	65	73	60	74	272	216	1·08	1·36
III.	South Manchester	116	116	133	172	537	517	1·56*	1·62
I.	Ancoats	62	43	65	57	227	96	2·19	5·17
I.	Central	50	32	33	38	153	80	3·16	6·04
I.	St. George's	95	74	69	73	311	179	3·09	5·37
II.	Cheetham	17	15	16	22	70	46	1·07	1·63
II.	Crumpsall	1	1	1	...	3	6	0·63	0·31
II.	Blackley	3	3	2	2	10	13	1·30	1·00
II.	Harpurhey	5	7	6	10	28	19	0·80	1·18
II.	Moston	2	1	4	7	14	16	0·76	0·66
II.	Newton	18	16	12	11	57	47	1·18	1·43
II.	Bradford	8	16	9	15	48	36	1·40	1·87
II.	Beswick	6	5	4	3	18	11	0·86	1·41
II.	Clayton	5	9	6	4	24	22	1·48	1·61
III	Ardwick	12	11	15	27	65	59	1·28	1·41
III	Openshaw	14	15	14	14	57	39	1·32	1·93
III	West Gorton	10	15	8	21	54	43	1·31	1·65
III	Rusholme and Kirkmanshulme	11	10	6	10	37	41	1·49	1·35
III	Chorlton-upon-Medlock	26	22	38	41	127	120	2·12	2·25
III	Hulme	33	33	34	45	145	145	2·28	2·28
III	Moss Side	9	9	10	11	39	33	1·14	1·35
III	Withington	1	1	8	3	13	37	0·80	0·28

* Excluding Moss Side and Withington.

Poor Law Cases.

Under the Tuberculosis Order issued by the Local Government Board at the beginning of the present year (1909) notification is now compulsory for all Poor-law cases. Owing to the great increase in notifications which has resulted, and to the procedures prescribed by the Order, the work of the office has greatly increased. This increase in cases, and the effect on the death-rate, will not be manifest until the end of the present year.

The general administrative procedures are summarised in the following table:—

TABLE 6.—STATISTICS RELATING TO PHTHISIS.

	1908	1907	1906	1905	1904	1903	1902	1901	1899 Sep. 1 to Dec. 31 1900	Total
Cases Visited and Registered—										
Males	971	988	929	817	745	848	917	959	1017	8191
Females	529	600	464	565	471	515	532	546	732	4954
Totals ...	1500	1588	1393	1382	1216	1363	1449	1505	1749	13145
Houses Disinfected—										
1. By Corporation—										
(*a*) With solution of chlorinated lime only	572	581	495	475	449	484	601	792	581	5030
(*b*) With lime solution only	0	0	0	0	0	0	2	15	109	126
(*c*) By Esmarch's method and solution of chlorinated lime	1177	1106	1042	1086	788	643	359	144	0	6345
Totals ...	1749	1687 (in 1556 houses)	1537 (in 1346 houses)	1561 (in 1387 houses)	1237 (in 1084 houses)	1127	962	951	690	11501
2. By Tenants—										
Esmarch's method	3011	2860	2637	2016	2266	2118	1937	1776	1299	19920
Totals...	4760 (in 1632 houses)	4547 (in 1627 houses)	4174 (in 1566 houses)	3577 (in 1267 houses)	3503 (in 1404 houses)	3245	2899	2727	1989	31421
Specimens of Sputum Examined:										
Positive	419	350	349	298	242	239	248	232	104	2481
Negative	866	654	562	475	418	389	337	285	154	4140
Totals ...	1285	1004	911	773	660	628	585	517	258	6621
Deaths—										
(*a*) Among total cases visited and registered	746	687	680	566	661	578	652	638	653	5861
(*b*) Among all cases for Manchester (including those under *a*)	1089	1082	1089	988	1106	1023	1145	1142	1403	10067
Cases reported as sent to Hospital	2225	1993	1541	1349	1207	1159	1166	1012	991	12643
Notified from common lodging-houses..	302	288	223	155	188	206	239	254	187	2042

2,950 special cases of cleansing were entered in the Business Book.

608 letters were written to owners with reference to the disinfection of houses.

In 419 cases infected bedding has been disinfected by the Corporation or destroyed.

256 spit-bottles have been supplied to patients.

18,000 (approximate) cardboard boxes have been prepared in the office and given to patients for the isolation of sputum in the home.

This table compresses into a very limited space the statement of the operations of the office.

It will be seen that very free use has been made of Professor Delépine's laboratory in determining the presence of tubercle bacilli in sputum, that is to say, in determining the infective character of cases.

The figures relating to deaths give us a ready estimate of the extent to which the notifications now received cover the whole known field of Phthisis in Manchester. It would appear that the proportion not notified is still considerable, though difficult to estimate. The proportion of deaths in 1908 occurring without previous notification is 343 out of 1,089.

It will be observed that the number notified as sent to hospital has increased. That is due to the action of the authorities of the Consumption Hospital, and enables us to maintain a useful supervision over the patients after discharge.

The number notified from common lodging-houses has increased owing, no doubt, to the distress experienced in the latter part of the year.

The notifications of cases to the Public Health Office come partly from public institutions and partly from private practitioners. There remains a number of cases under the care of private practitioners which are not notified. There exists no published means of ascertaining how large this number is. That it is not inconsiderable is shown by the number of deaths of persons in whom the cause of death is registered as Phthisis but who have not previously been notified. But it is diminishing. The actual sources of the notifications are shown in the following table :—

TABLE 7.

PARTICULARS OF CASES NOTIFIED FROM INSTITUTIONS DURING THE YEAR 1908.

Institutions	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Total
Manchester Union Workhouse	161	101	110	108	480
Chorlton Union Workhouse	47	27	33	41	148
Prestwich Union Workhouse.....	9	5	4	...	18
Poor-law Union Cases	3	4	3	3	13
Royal Infirmary	20	17	26	12	75
Ancoats Hospital	20	12	11	16	59
Chorlton-upon-Medlock Dispensary ...	...	...	2	5	7
Hulme Dispensary	2	3	1	...	6
Gartside Street Dispensary	5	4	8	13	30
Medical Mission, Red Bank	1	1	...	2	4
St. Mary's Hospital	1	10	7	31	49
Northern Hospital	2	...	...	...	2
Consumption Hospital	54	56	84	69	263
Southern Hospital	...	...	...	...	...
H.M. Prison	...	...	...	...	...
Jewish Hospital	...	1	1	1	3
Cases from Death Returns	1	...	1	...	2
Children's Hospital, Pendlebury	...	...	...	...	...
Total	326	241	291	301	1159
Private Practitioners	85	86	85	89	345

It is interesting to note the large number of cases notified from the Crumpsall Union as compared with the number notified from the Chorlton Union, although the total number of deaths of Manchester persons occurring in the latter is greater than the total number occurring in the former. This great discrepancy shows very clearly the intimate relationship between poverty and Phthisis.

TABLE 8.—PHTHISIS. PATIENTS TREATED IN CLAYTON VALE HOSPITAL TO THE END OF 1908.

MALES.

Year	No. of Cases Admitted	Cases Discharged	Re-admitted	Died in the Hospital	Dead December, 1908	Discharged with lungs improved	Discharged with lungs not improved	Number of discharged who gained weight in the Hospital.	In full work, December, 1908	In partial work December, 1908	Lost sight of	Still in the Hospital, at end of 1908
1904	20	In 1904, 5	...	...	18	...	5	1	...	...	1	1
		In 1905, 10	...	2		2	8	7				
		In 1906, 2	2	1		...	2	1				
		In 1907, 0	1	...		...	...	...				
		In 1908, 0	1	...		...	...	...				
1905	24	In 1905, 8	2	3	21	2	6	9	1	...	1	...
		In 1906, 8	...	2		4	4	5				
		In 1907, 0	...	2		...	...	...				
		In 1908, 0	...	1		...	...	...				
1906	38	In 1906, 25	1	4	27	9	16	23	...	2	5	1
		In 1907, 7	...	1		2	5	3				
		In 1908, 0	2	2		...	...	...				
1907	30	In 1907, 12	...	5	20	5	7	7	2	1	2	1
		In 1908, 8	...	3		4	2	6				
1908	30	In 1908, 16	...	3	6	13	1	13	4	...	1	11

FEMALES.

1905	20	In 1905, 3	...	1	12	1	2	3	2	1	3	2
		In 1906, 4	6	5		1	3	4				
		In 1907, 6	1	...		5	1	5				
		In 1908, 0	1	...		...	...	...				
1906	23	In 1906, 6	...	2	13	2	4	6	2	2	2	3
		In 1907, 6	2	2		1	5	5				
		In 1908, 6	3	1		6	...	6				
1907	27	In 1907, 9	1	5	14	6	3	8	1	2	2	4
		In 1908, 10	3	2		7	1	6				
1908	33	In 1908, 9	...	7	9	8	2	9	...	...	...	16

The results of treatment of the Corporation cases in the Crossley Sanatorium and in Clayton Hospital respectively are set forth in the following tables:—

TABLE 9.—PHTHISIS. CORPORATION PATIENTS TREATED IN CROSSLEY SANATORIUM TO THE END OF DECEMBER, 1908.

MALES.

Year	Number of Cases Admitted	Cases Discharged	Re-admitted	Died in the Sanatorium	Dead, May, 1909	Discharged with lungs improved	Discharged with lungs not improved	Number of discharged who gained weight in Sanatorium	In full work May, 1909	In partial work May, 1909	Lost sight of	Still in the Sanatorium Jan. 1st, 1909
1905	16	In 1905..... 5	1	0	8	1	4	4	1	...	2	...
		In 1906.....11	2			6	4	10				
		In 1907..... 2	...			...	...	...				
		In 1908..... 1	...			1	...	1				
1906	18	In 1906.....11	...	1	11	1	10	7	2	...	5	...
		In 1907..... 5	1			5	...	4				
		In 1908..... 1	...			1	...	1				
1907	29	In 1907.....19	1	1	11	8	11	18	10	2	2	...
		In 1908.....10	2			5	4	8				
1908	36	In 1908.....23	1	1	6	10	12	19	5	4	...	12

FEMALES.

1905	14	In 1905..... 8	...	1	7	3	4	7	2	1	2	...
		In 1906..... 5	1			1	4	2				
		In 1907..... 1	...			1	...	1				
		In 1908..... 0	...			...	...	...				
1906	14	In 1906..... 8	...	...	8	5	2	7	0	3	1	...
		In 1907..... 7	1			3	3	6				
		In 1908..... 1	1			1	...	1				
1907	16	In 1907.....10	1	...	6	5	3	6	1	5	2	...
		In 1908..... 9	1			2	5	6				
1908	13	In 1908..... 8	...	...	6	3	5	7	...	1	...	5

In explanation of the smallness of the number who are restored to full work as the result of treatment in the Sanatorium it may be pointed out that these cases are sent in with a view to protect the families from infection, and that they often do not come under our notice until their disease has made decided progress. In order to establish their infectivity, the expectorations must show the presence of tubercle bacilli. It would appear that better results have been obtained with the patients admitted in 1907 than was the case with the earlier Corporation cases. It has certainly appeared as if patients were beginning to apply earlier in the disease. But sufficient progress in this matter will not be made until provision has been secured for the families of persons under treatment.

The facts may be thus presented. Of 99 male Corporation patients sent to the Crossley Sanatorium up to the end of December, 1908, 18 were in full work in May, 1909, and 6 were in partial work; 36 were dead. The expenditure is, so far as one can at present judge, a profitable one, setting aside the prevention of infection, but it should be possible to do better.

The operations at Clayton are intended primarily to remove infection from households, and it is mostly advanced cases which are received. They are not to be judged, therefore, in the same manner. Of 112 male cases admitted up to the end of 1907, 86 have died, and 7 were in work in December, 1908, 4 in full work, and 3 in partial work. Of 70 females, 5 were in full work, 5 in partial work at the end of December, 1908.

Valuable Results of Investigation.

The histories of cases of Phthisis notified to the Office continue to be taken with care, and with more than the usual proportion of cases elucidated.

Out of 613 cases reported from private houses, it has been possible to ascertain a likely source of infection in 273 instances. Amongst cases notified from the Workhouses to the number of 678 cases, a likely source of infection has been

discovered in 264. This is an unusually high proportion for such cases. It is to some extent explained by the considerable number (55) in which decided exposure had taken place in an infected house.

Exposure to infection was ascertained in no less than 1,137 instances out of 1,500 notified. The cases which have hitherto baffled the enquirers have been tramps and homeless persons notified from the Workhouses, and cases which have lasted a great many years.

These difficulties have been surmounted to an unusual extent.

When the two sets of histories for 1908 are compared they are curiously alike. Where they differ is in the large extent to which infected lodging-houses figure in the cases treated in Union Hospitals.

The relatively small extent to which in Union cases fathers figure as the source of infection in comparison with mothers does not hold in cases from private homes, but the reverse, and it will be seen that the same difference shows itself over a number of years.

This probably indicates that there is a relatively high proportion of widows, and possibly also of deserted wives, amongst the Union cases.

These investigations not only strengthen the evidence of infection, but continue to make its main features clearer year by year. The facts on which the tables are founded serve in addition for administrative requirements, and give point to home instructions and force to the precautions taken in workshops and other places.

The analysis is as follows :—

TABLE 10.

SOURCES OF INFECTION—PHTHISIS, 1908.

CASES OTHER THAN THOSE NOTIFIED FROM THE WORKHOUSES.

MOST PROBABLE SOURCE OF INFECTION	Likely 1902-1908	1908			
		Likely	Less Likely	Possible	Total
Father	195	25	14	1	40
Mother	121	17	8	3	28
Brother	185	20	8	..	28
Sister	150	20	7	..	27
Husband	71	11	4	..	15
Wife	38	2	3	..	5
Uncle	32	2	3	..	5
Aunt	27	2	3	..	5
Son	42	10	1	..	11
Daughter	28	6	3	..	9
Grandfather	8	4	1	..	5
Grandmother	4	..	1	..	1
Nephew	6	2	..	..	2
Niece	4	1	1	..	2
Father-in-law	1	1	1	..	2
Mother-in-law	6	1	1	..	2
Son-in-law	1	..	..	..	..
Brother-in-law	36	7	2	1	10
Sister-in-law	21	2	..	..	2
Cousin	20	7	1	1	9
Relatives	12	2	4	..	6
Companion	169†	36	13	..	49
Neighbour	71†	20	12	..	32
Tenant (Landlady, etc.)	17	..	4	..	4
Lodger, Fellow-lodger	49	4	4	..	8
Patients, Hospital, etc.	2	1	3	1	5
Employer	9†	4	1	..	5
Workfellow	209†	40	46	..	86
Workplace or Work	51†	13	72	4	89
Houses (including public-houses, etc.)	93†	11	32	..	43
Milk or Food	4	..	9	1	10
Club	..	..	..	..	..
Clothing	..	..	..	..	..
Re-infected	6†	..	..	..	..
Army	9	1	..	..	1
Extension from Bone, etc., Disease	1	..	..	..	..
Railway carriages	..	..	..	..	..
Schoolfellow	7	1	19	2	22
Monkey	1	..	..	..	..
Infected out of Manchester	..	..	..	..	36
Multiple sources	..	..	..	..	89
No information	..	..	..	..	9
Total	1706	273	281	14	613*

* This total does not include the 89 cases with Multiple Sources. † Six years.

SOURCES OF INFECTION—PHTHISIS, 1908.

Cases notified from the Workhouses.

Most Probable Source of Infection	Likely 1902-1908	1908			
		Likely	Less Likely	Possible	Total
Father	44	9	6	1	16
Mother	54	18	8	..	26
Brother	77	14	4	..	18
Sister	63	14	2	..	16
Husband	66	17	3	..	20
Wife	52	5	5	1	11
Uncle	6	1	..	..	1
Aunt	2	..	..	..	..
Nephew and Niece	22	3	..	..	3
Son	25	5	2	..	7
Daughter	16	3	2	..	5
Step-brother	2	1	..	..	1
Father-in-law	8	3	1	..	4
Mother-in-law	1	1	..	..	1
Son-in-law	3	1	..	..	1
Brother-in-law	14	2	5	..	7
Sister-in-law	9	3	2	..	5
Cousin	6	3	..	..	3
Relatives	4	3	..	..	3
Companion	144†	40	16	..	56
Schoolfellow	4	2	4	..	6
Neighbour	30†	11	4	..	15
Tenant (Landlady, etc.)	15	3	..	..	3
Lodger and Fellow-lodger	46	7	9	..	16
Carried forward	713	169	73	2	244

† Six years.

CASES NOTIFIED—*continued.*

MOST PROBABLE SOURCE OF INSPECTION	Likely 1902-1908	1908			
		Likely	Less Likely	Possible	Total
Brought forward.....	713	169	73	2	244
Employer	2	2	4	..	6
Workfellow	86	18	35	..	53
Workplace or Work	55	12	40	1	53
Houses (including public-houses, etc.)	260	55	155	..	210
Army	30	3	2	..	5
Milk or Food	2	..	..	..	..
Asylum, Workhouse, etc.....	18	5	10	..	15
Extension from Bone, etc., Disease	1	..	..	..	..
Infected out of Manchester ...	..	..	..	..	50
No information	..	..	..	..	42
Multiple Sources	..	..	..	..	196
Total.....	1167	264	319	3	678*

* This total does not include the 196 cases with Multiple Sources.

The main outlines of the work carried out under the Voluntary Notification of Phthisis are given in Alderman McDougall's statement, which may be obtained on application by any member of the Council to the Public Health Office, Tuberculosis Section.

RELATION OF ACCIDENTS TO PHTHISIS.

The subject of Tuberculosis is attaining ever larger and larger dimensions, and any discussion of current questions to be of value would necessarily stretch to a considerable length. It may be stated, however, that there are few of these questions, so far as they relate to Phthisis, on which the records of the Office are not able to throw valuable light, or have failed to do so. They are, however, susceptible of even fuller treatment. As an example of the use to which they may be put, one may consider the relation of serious accidents and injuries to the production of Phthisis. Whatever view may be taken of the mode of propagation, or the degree of hereditary influence involved in the production of the disease, we have all been throughout agreed on the profound

influence exerted by depressing physical causes. An attempt has, therefore, been made to obtain numerical data in reference to the relation of previous injury to the commencement of cases of Phthisis. Certainly in recent years, a fairly complete statement of the occurrence and date of such injuries has been made, and the date of the apparent commencement of symptoms has also been recorded. Mr. Lock has excerpted for the years 1902–1908 a complete statement of the facts ascertained, which have been arranged in Table II, *showing the intervals elapsing between the occurrence of previous injury and the beginning of symptoms for various kinds of injury*. (See Table II, Page 97.)

It is probable in regard to certain of these accidents that no omissions, or next to none, will have been made. This is true, especially, of heavy falls, fractures of large bones, and fractures of the ribs. Now, in regard to each of these classes of injury, the number of accidents occurring within five years anterior to the commencement of Phthisis greatly exceeds the number occurring throughout the whole of the previous life. This, of itself, establishes a strong presumption that the accidents in question had a causal relationship to the onset of Phthisis.

It will be seen that the largest number occur within six months. This number, however, represents at least two sets of facts. In a considerable section the attack of Phthisis began at the same time as the accident. We have here to reckon with the tendency to ascribe a Phthisis already started to the accident. We have also to reckon with the diffusion of an active Tuberculosis already in progress, but not evident as Phthisis, as the result of the violent shock experienced. This phenomenon ought probably to be distinguished from injury to some part or parts of the body, including the nervous system, laying it open to invasion by tubercle bacilli which have somehow entered the circulation after the accident. Be that as it may, it appears safer to exclude those cases in which Phthisis is said to have begun at the same time as the injury. These number 64, leaving for the rest of the first three months 18 cases.

If we take accidents as a whole, we see, therefore, that their subsequent effect in producing Phthisis is manifested in increasing measure during the first year, afterwards reaches its maximum in the second year, remains nearly at the same level during the third year, and then rapidly declines.

It appears probable that the maximum effect is manifest from 18 to 30 months after the accident. In a contribution published in the *British Medical Journal*, 1908, Vol. II., p. 561, *et sequitur*, an attempt was made to arrive at the latent period of tuberculous infection, and it appeared that when well-defined periods of exposure could be selected, the most common latent period was about a year. The numbers were, however, small. Assuming in a much larger number of cases that infection was for the most part contracted during the later stages of the disease in the infecting case, the most common latent

Table II.—Accidents. Nature of Accidents.

Period between accident and apparent onset	Fracture of large bones	Fracture of small bones or crush of hand or foot	Heavy fall or fall from considerable height	Run over	Fracture of ribs. or crushed chest	Strain	Heavy weight fell on him	* Other accidents	Total
Within 6 months ...	9	6	16	3	6	4	3	35	82
6 months to 1 year ...	5	..	5	..	3	2	1	13	29
1 year to 2 years ...	10	7	9	1	9	6	3	32	77
2 years to 3 years ...	8	7	8	1	7	6	2	22	61
3 years to 4 years ...	8	7	10	..	..	1	..	13	39
4 years to 5 years ...	9	2	4	..	2	..	..	11	28
5 years and upwards..	28	13	17	4	14	..	1	53	130
Total ..	77	42	69	9	41	19	10	179	446

* These include rupture, internal injuries, gunshot wounds, broken and crushed heads, stabs, etc.
The high proportion in the first six months is largely due to rupture.

period can be safely stated as between a year and 20 months. These periods do not differ materially from those relating to accidents, except that the latter are longer. The suggestion is evident that accidents predispose to the ready lodgment of infection in the system soon after the occurrence of an accident, or, at all events, that the injured parts serve as points of origin for a fatal invasion.

If such is the case, and as early as 1890 the effects of injury came out strongly in these enquiries, it is evident that great care should be directed to shielding injured persons from risks until their health is completely restored, as well as to their complete recovery.

There is no doubt, to my mind, that a very large contribution is made to improvement in the health of the community under our voluntary notification of Phthisis, and that in a variety of ways : by removal of sources of infection ; by instruction in personal precautions ; by securing aid in cases of distress ; by the earlier isolation of infecting persons ; by improvements in workshops ; by suppression of expectoration in dangerous places ; and by the attention constantly directed to particular sources of risk.

But the work is outgrowing the machinery provided to cope with it, and, as pointed out in previous reports, there are serious obstacles to progress.

So far it has not been possible to deal adequately with Tuberculosis in children. It is, however, gratifying to know that the work initiated last year by ladies of taking tuberculous children to a home in the country is being again taken up by an enterprising body of ladies.

The greatest difficulty experienced in dealing with Phthisis is that of isolating cases of Phthisis at a sufficiently early period. This in turn is due to the want of provision for families in the absence of the bread-winner ; partly also, it is to be feared, to less praiseworthy motives. Nevertheless, until some means have been devised by which families are secured against want, and the bread-winner can seek shelter with an easy mind, great advance in the cure and prevention of Phthisis will be much impeded.

Particulars of the straits to which the families of consumptives are reduced have been given in previous reports. They have been prepared for the present year, but will not be reproduced here.

Inasmuch, however, as this is a matter of supreme importance, this section will be concluded with a summary of the return in question, prepared by Mr. Lock.

TABLE 12 SHOWS PARTICULARS OF DISTRESS CLASSIFIED ACCORDING TO THE REQUIREMENTS OF THE FAMILY IN EXCESS OF THE INCOME. FOOD CALCULATED ON THE ATWATER SCALE. HOUSEHOLD SUNDRIES CALCULATED ON MR. ROWNTREE'S SCALE. SHORTAGE UP TO — IN SHILLINGS.

Conditions affecting individual cases.. ..	—5	—10	—11	—12	—13	—14	—15	—16	—17	—18	—19	—20	—25	25+	Total
Alive, June 1st, 1909 ..	13	16	7	2	4	8	4	2	7	6	2	3	5	7	86
Dead	10	21	5	5	2	4	2	4	6	4	2	1	6	2	74
Removed to Union Hospital	12	10	5	4	3	6	4	4	4	6	1	3	9	4	75
Removed to Delamere Sanatorium	4	2	..	1	1	..	..	..	1	..	..	..	..	1	10
Removed to Bowdon ..	..	3	2	..	..	1	..	1	2	..	1	..	..	..	10
Removed to Clayton Hospital	1	3	..	..	..	1	..	..	1	..	..	..	1	..	7
Removed to Sunnyside or elsewhere	..	2	..	..	..	2	..	..	..	1	..	..	..	..	5
Remained at home	7	17	5	2	2	3	1	1	6	2	2	1	4	1	54
Relief received.....	..	2	2	..	1	3	2	2	2	5	..	3	8	6	36

I would urge the importance of finding some way in which the families of contemptives may be secured against distress in the absence of the breadwinner.

WORK DONE UNDER THE DAIRIES, COWSHEDS, AND MILKSHOPS REGULATIONS, AND UNDER THE MODEL MILK CLAUSES.

In 1892 your present Medical Officer of Health presented as a necessary part of the prevention of Tuberculosis the interception of tuberculous infection derived from cattle, and especially through milk, and defined as the means by which this might be effected (1) the general sterilisation of milk, (2) the provision of suitable housing for cows, (3) the removal from herds of cows affected with Tuberculosis. At the same time, he pointed out that unless the first two proposals were carried out, the last would not suffice.

None of these changes is an easy one to effect. As regards the general sterilisation of milk, the opinion has been expressed that, by this means, ferments valuable, if not necessary, for digestion are destroyed. Certainly it would be a great boon if raw milk free from tubercle bacilli and from other injurious materials, clean, and of good taste and quality, could be given to the public. Such a supply would improve the health of the young, would make milk a favoured article of diet, and would so increase the sale of milk as to greatly extend its production and the prosperity of the agricultural community.

All these results have been achieved for some 30 years by the Pure Milk Supply Company, of Copenhagen. A company was started in Manchester, early in 1898, on similar lines, and, in addition, the cows from which the milk was supplied were required to be guaranteed free from Tuberculosis. Most unfortunately, the success achieved was not so rapid as to justify the gentlemen who started the enterprise from continuing Had it succeeded, there can be little doubt that the eradication of Tuberculosis would have been well established in this district.

The general opinion continues to be that the sterilisation of milk, so far as mere scalding goes, at all events, does not injure the quality of milk very materially. It occurred to a French physician in the town of Fécamp that, if milk were modified so as to assimilate it in chemical composition to human milk, were put up in small separate bottles each containing enough for one meal, and so shaped that a teat could be placed on the bottle, and were then sterilised and corked or sealed, it might usefully be supplied to poor people at cost price, provided that they submitted their children to examination and weighing, and that the results of the feeding were carefully observed. It is evident that, with a sufficiency of staff, supervision might thus be secured over a section of the poor and less instructed public.

The idea was first taken up in St. Helens, but extended to other places—Liverpool, Battersea, etc.

It has probably been carried out in Liverpool on a more extensive scale than in any other town.

It requires, however, such precautions for complete success that there appears to be no sufficient reason why raw milk from cows guaranteed free from Tuberculosis should not be supplied from the same sources.

The whole question of the supply of milk is so bound up with the maintenance of the public health that the usual arguments in relation to municipal trading do not entirely or unconditionally apply,

The provision of proper housing for cows is necessary for progress. Cowsheds must be suitably constructed so that the floors and walls can be kept clean. Yet this is still frequently not attended to. From want of space the walls are often bespattered with dung, and from faulty construction the floors cannot be cleaned. Under such conditions, if Tuberculosis enters a cowshed, it is bound to spread.

Light is needed so that it may be possible to see whether the cowshed is clean or dirty. Such an amount of light is too often wanting. It would be hopeless to ask for the amount of light necessary to produce a serious effect on the micro-organism of tubercle. But sufficient light for cleaning purposes is at least essential. Ventilation should be so arranged as to give the amount of fresh air required to maintain cows in health, distributed so as to avoid draughts as far as practicable. The farmer will usually object to this amount of fresh air, as he considers that his feeding bill is in this way increased, and he forgets or disbelieves in the losses in stock which will follow on an insufficient supply of fresh air. Fortunately for him and for the community, the question of human health is bound up with that of his stock.

The Manchester Corporation have long held the view that good housing conditions are essential to a good milk supply. In 1896, fresh regulations were obtained under the Dairies, Cowsheds, and Milkshops Order, which, *inter alia*, required that the udders of cows should be kept clean, and that the hands of the milker should be clean. So far as the cleansing of the udders is concerned this has been carried out, and, in addition, the entire surface of the cow is kept free from dirt.

As regards the milker's hands, it is really essential, if this regulation is to be carried out, that a wash basin and towel should be provided in or close to the cowshed. This has been done in many, but not in all instances. It is to be feared that the class of milkers employed is often such as to require closer attention to cleanliness than can at present be given. But, at least, provision of facilities for cleansing should be afforded, and milkers should in addition be required to wear clean overalls.

The Manchester Milk Regulations have been carried out as regards construction. A number of unsuitable cowsheds have been closed, and nearly all those which require alterations or structural improvements have been altered. They admit, however, of closer supervision in the matter of routine work.

As regards the removal of advanced cases of Tuberculosis, this cannot be regarded as any solution of the difficulties involved in dealing with Tuberculosis. If, however, it were judiciously and strenuously carried out, without compensation, it might help to bring about the complete eradication of Tuberculosis.

Undoubtedly, it would be attended with hardship. It might be said that the hardship might be overcome by mutual insurance. So it might, but manifestly a careful farmer would object to pay through insurance or otherwise for the losses incurred by a neighbour who buys bad cows, rents unsuitable premises, or takes insufficient trouble. There is no means of escaping the consequences of bad conditions and bad management.

In 1895, the report of the first Royal Commission on Tuberculosis was issued. In this report, special stress was laid on Tuberculosis of the Udder, and it was stated that tuberculous milk is mainly derived from the tuberculous udder. Milk from udders affected with Tuberculosis was shown to infect readily certain animals, including pigs, guinea pigs, and calves, whether injected into their bodies or given to them as food. It is important that the relationship of udders attacked by Tuberculosis to tuberculous milk should be clearly understood. Can milk become tuberculous sufficiently to cause the disease in guinea pigs from any other source than from a tuberculous udder? Can it, for example, be infected from the circulation in the system of cows of tubercle bacilli, which find their way into the milk, without invading the substance of the udder and setting up disease in that organ? This must be an excessively rare event, and, if it happens, it is safe to say that the udder would shortly show itself to be diseased. In fact, this has happened on several occasions under the eyes of the Veterinary Surgeon, and it is reasonable to suppose that, in the first instance, the udder was invaded, though not to such an extent as to render the invasion manifest.

A more likely source of infection is the introduction of tuberculous discharges from the flanks of the cows by the hands of the milker. But though this is a possibility it must be unusual, since in the great majority of instances a diseased udder has been found corresponding to the detection of tuberculous infection in the mixed milk of the herd, while in other instances there has been reason to suspect that the diseased cow was removed before the Veterinary Surgeon arrived on the scene. Not only so, but in the herds which have not yielded tuberculous milk there are many cows with tuberculous discharges, and it is

difficult to believe that so many milks would escape contamination if this were a frequent or potent source of invasion. Moreover, such a possibility would form the very strongest argument for the complete eradication of Tuberculosis.

For practical purposes this also may be set aside.

We come to the Royal Commission on Tuberculosis, the report of which was published in 1898. This Commission dealt with administrative requirements, and recommended that towns should have powers conferred upon them similar to those contained in the Glasgow Police (Amendment) Act.

That is to say, the Commissioners recommended that Town Authorities should have the right without notice to inspect cowsheds from which milk is supplied in their district, and to examine the cows contained in them. This right, however, has not been granted, though the principle embodied in the recommendation has been practically affirmed.

They also recommended that Town Authorities should have the right conferred upon them to require cowsheds from which their milk is supplied to be in a sanitary condition.

They further made a recommendation that the Government should provide tuberculin and veterinary assistance to farmers desirous of testing their herds for Tuberculosis.

To the first of these recommendations we owe the Model Milk Clauses, which, along with other authorities, Manchester obtained in 1899. The mode in which these clauses is worked has often been explained. Briefly, however, samples of milk taken at railway stations are submitted to Professor Delépine, who in three or four weeks reports whether they contain the infection of Tuberculosis or not. If a sample gives positive results, the farm concerned is then visited by the Veterinary Surgeon and the cows are examined. If any cow shows in the udder signs suspicious of Tuberculosis a sample is taken and submitted to Professor Delépine, who is now able, within a brief period, to say if the milk is tuberculous, and, therefore, if the udder is affected. If the answer is yes, the cow ceases to supply milk to the City.

There is much in the working of these clauses which is unsatisfactory. But, given an able and judicious veterinary surgeon, they can be made to yield good results.

It will be evident, however, from the above statement that Professor Delépine's work is more important for actual diagnosis than is that of the Veterinary Surgeon. This would not be the case if the Veterinary Surgeon could visit farms without any previous sample having been taken.

The Veterinary Surgeon, moreover, is able to exert an influence for good outside the routine mentioned. In 1898 a paper of advice was issued to farmers supplying milk to Manchester, intended, *inter alia*, to secure a cleaner supply. But at his visits to farms the Veterinary Surgeon (Mr. Brittlebank) is able to give verbal and pointed instruction in this matter, as well as to advise as to the age of stock and methods of feeding.

As a result, the milk now arriving in Manchester is freer from dirt, much freer from Tuberculosis, and also much less capable of causing other forms of disease than it was when these clauses came into force. It is also probably of a better average quality. No stronger proof could be adduced that suitable powers conferred on Town Authorities can be used greatly to the public advantage.

That the visible dirt in milk has vastly diminished is evident to anyone, but there is nothing extant to prove this in the Public Heath Office, nor would any proof have been procurable had not Professor Delépine steadily from the first examined milks for their power of producing disease other than Tuberculosis, and determined as well as registered the amount of dirt which they contained.

In the books of the Public Health Laboratory the facts are carefully recorded, and a report was presented to the Sanitary Authority by Professor Delépine in 1908 showing the changes which had taken place.

The results obtained in the present year do not show a continuance of the progress hitherto achieved in the reduction of tuberculous milk entering the City. For this two causes may be assigned. The first is that a greatly reduced number of samples were taken in 1908. The second is that for a considerable time we have had no prosecution on account of failure to notify Tuberculosis of the Udder. Practically, this is the only offence in respect of which proceedings can be taken under the Order, and, if advanced disease in the udder disappears, there are no provable offences. Now, there is no doubt that an occasional prosecution exercises a deterrent influence, and with the improvement already effected this aid disappears. It is unfortunate that the reduction in number of samples taken in 1908 has been followed by a reduced number allowed for in the estimates for 1909. Unless a large number of samples be taken the control hitherto exercised cannot be maintained.

The great improvement which has taken place in the milk of Manchester has been due to a number of factors.

No little amount of it is to be credited to the improved condition and to the maintenance of cleanliness in our own cowsheds, which must have exercised great influence, especially in this neighbourhood. We have had the assistance of three able Veterinary Surgeons—Mr. James King, Mr. Lloyd, and Mr.

Brittlebank—to the last of whom is owing the persistent maintenance of a judicious insistence and instruction, and the influence due to natural and acquired skill. To the late Dr. Henry Ashby's campaign against impure milk, carried on in 1896 and 1897, and to his efforts to obtain a better milk supply, much credit must also be given. Professor Delépine's scientific assistance has, of course, been valuable and indeed indispensable throughout.

The death-rate from Tuberculosis other than Phthisis has diminished at a distinctly greater rate than the death-rate from Phthisis in the City of Manchester.

Now, this death-rate pertains mostly to young people.

An argument might be founded on these facts such as this.

"No doubt the death-rate from tuberculous disease in young people is for the "most part the result of human infection. A portion, however, may be ascribed "to tuberculous milk. Let us say one-third. It is this portion which "administration of the milk clauses might be supposed to affect directly. It "may be claimed that the greater reduction of the death-rate under 'other "Tuberculosis' is due to this portion of it." This is, however, little more than a suggestion.

The results attained in connection with the Manchester milk supply by the various means adopted, but principally through the Model Milk Clauses, may be thus briefly stated:—

(1) The percentage of tuberculous milks examined for the Public Health Office by Professor Delépine declined from 17·2 per cent. in 1897-8 and 11·5 per cent. in 1900 to 6·6 per cent. in 1906 and 5·8 per cent. in 1907.

(2) The udder affection is now detected at a much earlier stage than formerly, and much of the infected milk which would in former years have come from the cows now found to have tuberculous udders is intercepted. The change is marked in respect both of the veterinary examinations and of the bacteriological. The improvement is, therefore, much greater than the mere numerical statement indicates.

(3) As regards the cleanness of milk, the results of Professor Delépine's examinations may be thus expressed. In 1906, the proportion of very clean milks was more than six times as high as it was in 1901, and the proportion of very dirty milks was about one-fifth of what it was in the former year. There can be little doubt that the improvement in years antecedent to 1901 was still greater.

(4) Chronic lesions were produced by inoculation in guinea pigs of the sediment from mixed milks in 24·5 per cent. in 1897, in 14·5 per cent. in 1900, and 7·0 per cent. in 1906.

Even these results are not to be obtained without much effort, and it is necessary not to be discouraged by difficulties and imperfections in the machinery. Yet it is with this matter as it is with human Tuberculosis. Each ascent reveals other peaks to climb. The control which we possess over our milk supply is slight compared with that enjoyed by the sanitary authorities of American cities. The progress which we have made towards a pure milk supply is trifling compared with that made in Copenhagen.

Greatly reduced though the amount of tuberculous milk entering the City has been, it is still considerable, nor does there seem any prospect that it will fall much lower. It has now reached a point at which the udder lesions causing Tuberculosis are at a comparatively early stage. Moreover, the proportion of cows yielding tuberculous udders in which the disease, apart from the udder condition, could be detected by clinical examination is now comparatively small, as will be seen from the following table supplied by Mr Brittlebank :—

Number of Cows suffering from Tuberculosis of the Udder in each year, and the number of those which were diagnosable clinically as suffering from Tuberculosis other than the Udder Lesions.

	1901	1902	1903	1904	1905	1906	1907	Total
Number of Cows proved to be suffering from Tuberculosis of the Udder	14	31	28	16	31	30	28	178
Number of these in which Tuberculosis was recognisable without consideration of the Udder condition	9	20	12	6	6	7	5	65
Number in which Tuberculosis was not recognisable clinically	5	11	16	10	25	23	23	113

It follows that a considerable effort has already been made by farmers supplying milk for consumption in Manchester to get rid of cows affected with advanced Tuberculosis.

It further follows that the complete removal of cows so affected will not in this district greatly influence the amount of tuberculous milk sent in.

It shows also, in conjunction with other facts relating to the disease, that the removal of cows affected with advanced Tuberculosis can only reduce the amount of tuberculous milk to a certain point.

This point would by no means be so low as that which we have reached, since to attain the latter there is needed also a good and practised administration in respect of Tuberculous Udder Disease, a condition by no means easy to diagnose.

Towards the end of the year 1907, Dr. Robertson, the Medical Officer of Health for Birmingham, being dissatisfied with the working of the Model Milk Clauses, presented a report to his Council, and, as a result, it was proposed to hold a Conference of the five towns principally interested in the administration of these clauses, viz., Birmingham, Leeds, Liverpool, Manchester, and Sheffield. Delegates from the various authorities concerned met accordingly in the Manchester Town Hall on February 28th, 1908, and after a full discussion the following resolution was arrived at:—

> "That, having regard to the experience of the five towns whose delegates have conferred on this subject, and also to the return recently made to the House of Commons at the request of Dr. Rutherford, a representation be made to the Presidents of the Local Government Board and the Board of Agriculture and Fisheries, with a view to inducing these Boards to take effective steps to enforce uniformly throughout the country proper and suitable inspection of dairies and cowsheds, and for regulating the construction of such dairies and cowsheds so as to ensure cleanliness and suitable hygienic conditions; and further, that the Government be respectfully asked to include, in their prospective legislation dealing with milk, clauses calculated to bring about the eradication of Tuberculosis from bovines within a measurable period of years."

Proposals for dealing with Tuberculosis in cattle have since been embodied in an Order which has been issued by the Board of Agriculture, but has not yet taken effect, and in the Milk Bill now before Parliament. It does not appear to your Medical Officer of Health that the proposals contained in the Order would lead to the desired end. It is true, any proposal for the eradication of Tuberculosis must be both expensive and fraught with difficulties. But that is true of any scheme. The question is, whether a scheme can be devised which can come gradually into force, which the country will endorse and pay for as a whole, and which will lead within a measurable time to complete extirpation of Bovine Tuberculosis. Such a scheme would justify large expenditure, as the results would probably be more than commensurate with the expenditure.

MILK AND TUBERCULOSIS.

By Mr. J. W. Brittlebank, M.R.C.S., D.V.S.M.

I beg to submit my report on the work done during the year 1908.

The duties I was appointed to carry out are—(1) The Inspection of Manchester Cowsheds and Dairies as to compliance with the Manchester Regulations made under the Dairies, Cowsheds, and Milkshops Order; (2) to act as Veterinary Inspector in the working of the Milk Clauses contained in the Manchester General Powers Act, 1899.

Manchester Cowsheds.

These number 198 on 105 farmsteads, and have a housing capacity of 1,857 cows. The actual number of cows in the City at one time, however, has not exceeded 1,700.

In the course of the systematic inspection of the City farms, 404 visits have been paid and 809 inspections of cowsheds carried out. The total number of inspections of cows is 8,271, indicating repeated inspection of many.

There is really no development of moment to report in the general conditions attaching to the production of milk in Manchester. I have gone into some detail in previous years in describing the general methods pursued in the City dairies. The general standard of cleanliness has been satisfactorily maintained, in spite of the occasional lapses which occur. I have drawn attention in previous years to the fact that we have on many of our dairy farms a class of milkers who, to say the least of it, are not desirable, and who require very special and constant supervision in so far as their personal cleanliness is concerned. This is no small matter when the distribution of the farms is considered, and it is quite impossible to carry out this part of the work as thoroughly as one would wish. I am afraid it will be long before much change can be hoped for. Candidly, there is little to encourage farmers to undertake more scientific methods in their dairying. The majority of the public are absolutely careless as to where and whom they get milk from. Few are sufficiently interested to visit the centres of production. It would be a boon to the whole community if some thoroughly-trained person could successfully establish a business for the supply of pure disease-free raw milk from cows housed within the City boundaries. The influence for good of such a business would be inestimable.

During the year one cowshed was closed. This place has been a source of trouble for some time. It is only a very small holding, with housing for eight cows, of a most unsatisfactory character. The history is that three different tenants have had to remove owing to the demands made for reconstruction.

If a place is somewhat out of the way, and only small, it is rather difficult to keep a watch on it to see that some new tenant may not come in, not always necessarily in ignorance that the place does not comply with the requirements of the regulations. The last tenant, however, first took this place with a view to establishing a carting business, and subsequently commenced cow-keeping.

Manchester Cows.

As has been already stated, the total number of inspections of City cows during the year was 8,271. At a careful census of the cows in the City taken during the year it was found that the actual number at one period was 1,746, the maximum accommodation being for 1,857.

The class of animal kept is a good one. Great care is exercised by the farmers when purchasing cows, and in many cases very high prices are paid. It may be safely stated that the cows kept within the City boundaries will compare very favourably with those kept elsewhere. We adhere as rigidly as possible to the exclusion of old cows, and encourage only the purchase of young animals, and I am convinced that the process of exclusion of risky cattle, rather than allowing the free introduction of any class with the subsequent removal of those becoming diseased, is the correct policy, and one which is most likely to afford, under the existing conditions, the greatest measure of security.

An attempt was made during the year to secure tuberculosis-free farms, and a number of farmers were willing to submit their animals to the tuberculin test and the subsequent removal of the re-acting animals. A schedule was drawn up stating the conditions which would have had to be complied with, prior to the issuing of a certificate of freedom from Tuberculosis. Unfortunately it was found impossible to proceed with the scheme at the time.

It is to be hoped that at some not distant date it will be found possible to commence the process of entire eradication of Tuberculosis from the City herds. I should say that I have endeavoured to get some of the farmers to proceed gradually at their own cost, but at present without success.

One cow suffering from Tuberculosis of the Udder was found during the year. The udder lesions when first found were only slight, and the carcase on slaughter was found to be in good condition.

The Manchester Milk Clauses.

No changes have been made in the methods of working the Milk Clauses of the Manchester General Powers Act, 1899.

Samples of milk are obtained at the Manchester and other railway stations, or elsewhere within the City, by the Food and Drug Inspectors. These are submitted to Professor Delépine for bacteriological examination. All samples reported by him as having been found to cause Tuberculosis are followed to their source at the farm by the Medical Officer of Health (or his representative) and the Veterinary Surgeon.

The Veterinary Surgeon examines all the cows on the farm, and takes separate samples from cows having diseased or suspicious udders. All samples are taken in sterilised bottles supplied by Professor Delépine, and every care is taken to exclude extraneous infections. These samples are, in turn, submitted to Professor Delépine for bacteriological examination, and in this way the fact of a cow having Tuberculosis of the Udder is definitely ascertained. Samples from cows found by clinical examination to have diseased or suspicious udders, without previous mixed station samples, are collected and treated in the same way.

In all cases a control sample is taken to ensure that the inspection and examination has been satisfactorily concluded, and that every source of infection has been removed.

Tuberculous Milk.

During the year 334 samples of mixed milk have been collected by the Food and Drug Inspectors in connection with Tuberculosis. Of this number 314 were taken at the railway stations, and the remainder were taken from carts coming in by road. The number of farmers represented in this total is 289. It will thus be seen that there has been very little duplication of samples.

Of these 289 farmers, 173 reside in Cheshire, and 20 of them (11·56 per cent.) sent tuberculous milk; 32 live in Derbyshire, and 2 of them (6·25 per cent.) sent tuberculous milk; 39 live in Staffordshire, and 3 of them (7·7 per cent.) sent tuberculous milk; 3 live in Shropshire, and none sent tuberculous milk; 34 lived in Lancashire, and 1 of them (2·94 per cent.) sent tuberculous milk; 8 live in Yorkshire, and 1 of them (12·5 per cent.) sent tuberculous milk.

It has been usual to insert a table showing the percentage of tuberculous milk sent into Manchester from 1901 inclusive. The figures for 1908 are given, and the table is again attached.

TABLE I.

YEAR	Number of farmers' milk tested during the year	Total number found to cause Tuberculosis in the experimental animal	Percentage of farmers sending Tuberculous milk	Percentage of farmers from EACH COUNTY whose milk was found to cause Tuberculosis.					
				Cheshire	Derbyshire	Staffordshire	Shropshire	Lancashire	Yorkshire
1901	272	27	9·9	10·46	9·23	8·00	10·00	...	...
1902	345	36	10·4	12·72	8·65	4·01	...	8·31	...
1903	329	45	13·6	14·76	9·58	15·15	40·00	...	...
1904	318	29	9·1	11·17	6·02	...	...	7·14	25·00
1905	565	47	8·3	10·26	6·00	6·38	...	2·98	12·50
1906	542	42	7·7	8·60	6·50	9·30	12·50	4·0	...
1907	562	38	6·76	7·71	4·48	6·94	12·50	3·70	...
1908	289	27	9·34	11·56	6·25	7·70	...	2·94	12·50

It will thus be seen that the average amount of tuberculous milk sent in by these 289 farmers is 9·34 per cent. The same careful supervision over the taking of samples has been exercised by Mr. Lock; in fact, owing to the smaller number collected a somewhat more stringent control has been kept, and from time to time lists have been issued to the Inspectors directing them to obtain samples from the cans of certain farmers. The majority of these were farmers whose milk had been either overlooked for some time, or, what was more often the case, farmers who for some period had discontinued sending milk to Manchester.

On reference to Table I. it will be seen that the percentage of farms sending tuberculous milk has risen from 6·76 in 1907 to 9·34 in 1908. The figures are somewhat disquieting after the gradual fall, commencing in 1904, which had characterised the amount of infective milk arriving each year. It might appear that the figures for 1908 mark a period of retrogression in the efficiency of the control exercised over the milk supply of the City, but from my personal observation I am not disposed to think so, for during my inspections to the country farms I have seen nothing to indicate increased laxity in the personal supervision of the farmers themselves. It is true that the discovery of the active infective udders at an earlier period may have some bearing on the results, inasmuch as the difficulties of diagnosis presented to the trained observer are

such as to render prosecutions for failure to notify out of the question, and the consequent general stimulation of observation on the part of the farmers is lost.

A fact which helps to prove that the diseased udders are discovered at an earlier period is that in only 4 cases out of the 27 has no cow been found. This point is of value, for no matter how advantageous it may seem at first glance to have expert advice placed at the disposal of farmers taking advantage of the notification clause, it does not appeal to the great majority of the individuals concerned, and they would much rather dispose of cows regarding which they entertain some suspicion (justifiable or not), and usually at very considerable sacrifice. It is what one can verify on almost any farm visited, for the farmers will tell you that had they known that there was anything suspicious about any particular cow they would have sold her "for what she would fetch," thus implying that, regardless of price, private disposal was preferable. It will, perhaps, emphasise this point more when it is shown that in 1903 the disease-producing cow or cows was found in 62 per cent. of the cases; in 1904 in 55 per cent.; in 1905 in 65 per cent.; in 1906 in 71 per cent.; in 1907 in 71 per cent.; and in 1908 in 85 per cent. of the cases. This is a feature which necessarily indicates a limit to the reduction of tuberculous milk beyond which it will be difficult to go with the present legislative measures. In the great majority of the cases seen now the lesions in the udder are the first indication that Tuberculosis is present, for many of the cows are found to be in excellent external condition. No doubt also the considerable reduction of the number of samples submitted for examination has some bearing on the increased percentage for the year.

It is worthy of note that the most marked increase occurs among the milk supplied by farmers residing in Cheshire, the county of all others most keenly interested in the general discussion which has been going on since Mr. Burns promised to introduce his measure for the further control of the milk supply, and it has been suggested to me that some farmers may have been holding on to their diseased stock in expectation of receiving some monetary compensation for them at an early period. I have seen nothing to justify this statement, and will go further and state that I have seen very few cattle in our normal milk-producing areas which might be designated as "wasters."

From returns supplied by the farmers themselves, the estimated number of cows at 289 farms from which the milk was subjected to examination is 5,269, being an average of just over 18 cows per farm. During the year the udders of 2,423 at the country farms have been examined for Tuberculosis.

As the result of following up the 27 tuberculous mixed samples, 23 cows were found and proved to be suffering from Tuberculosis of the Udder. Of these cows, 20 were slaughtered in my presence, or I examined the carcase soon

after; in 5 cases the entire carcase was passed as fit for food; in 3 cases portions of the carcases were passed; in each of the remaining 12 instances the entire carcase was condemned.

In two additional cases the cows died some time after discovery, and I was enabled to make a post-mortem examination in each case. This leaves one cow to be accounted for; she was sold by the farmer immediately after my visit, and we were unable to ascertain what became of her.

Two further cows were found to be suffering from Tuberculosis of the Udder. One case was notified, and the other was found by me on visiting a farm which I had been invited to visit and inspect whenever I was in the district. Both these cows were slaughtered under my supervision, and the carcases of both were condemned as unfit for food. The sum total of the year's work in this respect is that, including the cow found within the City boundaries, 26 cows have been found and proved to be suffering from Tuberculosis of the Udder, and of these the disposal of 25 was ascertained. This marks an improvement on the work of previous years.

No prosecutions of farmers for failure to notify were instituted during the year. Two orders were made during the year upon farmers to cease supplying milk to the City. In both cases the operation of the order was suspended until such date as agreed upon to carry out the necessary reconstructions. Further, in one case reported upon in 1907, where such a prohibitionary order had been imposed, the complete reconstruction of all the farm buildings was carried out, the work done being of an admirable character. The order was rescinded, and the farmer has resumed sending milk into the City.

Many interesting points arise from time to time in the carrying out of this work, but they do not call for any special mention in this report. Considerable interest has been displayed by the farmers in the discussion as to the best lines upon which to proceed in the eradication of Bovine Tuberculosis. I have attended a number of the meetings in Cheshire, and it is worthy of note that the great majority are anxious that something should be done to restore the public trust in the article which they have to sell. They, however, fear the expense attaching to any progressive measures of improvement, and are most concerned with the question of the payment of compensation for the diseased stock which are condemned by the authorities. This is, of course, only one aspect of a large question, but it is one which presents itself most prominently to the farmer. Among the meetings which I attended was that of the Council of the Cheshire Milk Producers' Association, which met to discuss a paper which had been presented by Mr. Robert Shepherd, Parkside Farm, Aston, Cheshire, and resulted in the passing of the following resolution :—

"That in view of the serious loss to stock-owners and to the nation resulting from Bovine Tuberculosis, this meeting is of opinion that the time has arrived when the question of a national scheme subsidised by Government for the insurance and subsequent elimination of all diseased animals should receive the earnest consideration of the agricultural community and the Government."

The basis of Mr. Shepherd's paper was the suggestion that a poll tax should be levied for the accumulation of money which would partly pay for the compensation for tuberculous cattle, the deficit to be found by Government. This would seem to admit from a farmer's point of view the principle that the claim which farmers have made for payment without direct contribution was unjustifiable, and I think correctly so. Based upon Mr. Shepherd's suggestions, and adopting Dr. Niven's proposals for the grading of farms into three classes—viz., Good, Fair, and Bad—or some such classification as would be made under a system of insurance, and based upon the estimated disease risk of any particular farm, I drew up a rough scheme which I presented to the Association.

I accepted in the first instance the proposal that all farmers should contribute a definite sum per annum for each head of stock on the farm, confined to bovines, the whole amount to form the nucleus of a compensation fund. The farm would then have to be visited, and the inspecting officer would decide, after due consideration of all conditions, the particular class under which each farm would come for compensation purposes, with the result that farms would be graded in respect of their compensation value. Thus the best farms, holding good cattle well cared for and healthy (apparently), would have a compensation limit per head of, say, £15 per cow; those coming under Class II. £10 per cow; and under Class III. £7 per cow. In the latter class would be found the worst class of farmer, farm, and cows. Further, as individuals in each of the last two classes attained such a standard of general improvement they would be entitled to promotion to the class next above them; all farmers to pay at equal rates, irrespective of which class their farms belonged to.

Finally, I suggested that the farmers in Class I. (the best class) should be gradually dealt with for the complete and thorough eradication of Tuberculosis, and on obtaining a certificate of absolute freedom they should be placed in a separate division, and freed from liability for poll tax. The whole of the subsequent risk would then lie entirely with the individual himself, and any carelessness resulting in the spread of Tuberculosis among his stock would be a very serious matter for him, as he would then be outside the compensation classes entirely, and would have himself to bear the loss resulting from condemnation of diseased cattle.

It is, of course, apparent that the figures mentioned as insurance values would be quite inadequate in the case of some highly-bred stocks, but special conditions could easily be devised for these.

My reason for presenting such proposals is that it would seem to me to be essential that any measure which has for its object the eradication of Bovine Tuberculosis should have some prospect of finality, as compensation out of public funds in perpetuity is not to be contemplated with equanimity. Further, it seems to me that to attain any measure of success the individual concerned—*e.g.*, the farmer—must have some financial stake at issue and some direct financial gain in prospect within a reasonable period, or that close personal co-operation, care, and close supervision of the whole work on his part will not be forthcoming.

I imagine that such a scheme would be gradual, equitable, distinctly educational, and by reason of the individual money risk involved would command the active interests of the farmers themselves, without which it would be impossible to hope for any great improvement, or at any rate adequate improvement for the cost involved.

I have not endeavoured to go into detail in respect of such a scheme, as the space at my disposal is very limited, but I should state that, following the adoption of any such general scheme, the registration of all cattle would become a necessity. Following a scheme for registering cattle, it would of course be requisite that all animals should be identified in some permanent manner. Messrs. Dowler and Sons, of Birmingham, have manufactured for me on lines suggested a handy instrument for the insertion of a button (non-corroding) in the ear of each animal. The button has two surfaces, upon which identification numbers can be placed, and is not removable except by entire destruction of the button, and so rendering it useless for placing in the ear of another animal. It is immaterial, of course, what method of identification should be adopted so long as it is permanent.

I should say that any such scheme as I have proposed should be entirely compulsory, governed by well-defined and adequate legal restrictions. I do not believe that any voluntary system, however generous the financial support might be, would be of any permanent value.

Tuberculin Test.

The complete table showing the application of the tuberculin test to the cows from which milk is supplied to Monsall, Clayton, and Baguley Hospitals is again inserted. It will be seen that the work of keeping this large herd free from Tuberculosis is being successfully carried on.

Table II.

Below is presented a table showing the actual results of each application of the test:—

Date of Test	Total Number Tested	MILKING HERD. Animals having been previously tested				PROBATIONARY ANIMALS. Animals not previously tested, but purchased subject to passing the test				Total Number of Animals Passing Test
		Number Tested	Number Re-acting	Number Passed	Doubtful Re-actions	Number Tested	Number Re-acting	Number Passed	Doubtful Re-actions	
October, 1902.....	101	91	11	80	0	10	4	6	0	86
April, 1903.....	108	88	3	85	0	20	6	13	1	98
October, 1903.....	108	98	1	96	1	10	4	5	1	101
April, 1904.....	103	76	0	76	0	27	10	17	0	93
October, 1904.....	103	85	0	84	*1	18	4	13	1	97
April, 1905.....	102	87	0	87	0	15	4	11	0	98
October, 1905	98	84	0	84	0	14	5	9	0	93
April, 1906.....	107	91	0	91	0	16	6	10	0	101
October, 1906	102	73	1	72	0	28	7	21	0	94
April, 1907.....	132	95	0	95	0	27	19	8	0	103
October, 1907	119	81	0	81	0	28	13	15	0	96
April, 1908.....	122	88	0	88	0	33	25	8	0	96
October, 1908	123	91	1	90	0	32	16	16	0	107

* Animal tested, but developed Bronchitis during test.

The following table of samples submitted in connection with the Manchester Milk Clauses summarises the work of the year :—

1908.

Number of specimens of mixed milk taken at the station		314	
Number of specimens of mixed milk elsewhere		20	
Number of each found to contain tubercular infection	Station 24 Elsewhere 2		In addition, 7 control samples were taken at the stations, of which 5 were proved capable of causing Tuberculosis.
Number of farms visited in consequence		26	Additional 3 visited as result of notification or otherwise. Total visits 57.
Number of specimens taken from individual cows as result of following up station and other samples		74	And 1 mixed sample.
Number of milks from individual cows proved to be tuberculous out of those given in the preceding column		25	
Number of udders proved to contain tuberculous lesions		23	
Number of milks taken from individual cows as the result of *notification* or *otherwise* than owing to the presence of tubercle bacilli in mixed milk		2	And 1 mixed sample
Number of udders in last column shown to be tuberculous by bacteriological examination		0	
Total number of specimens submitted for examination		416	

THE FACTORY AND WORKSHOP ACT, 1901.

I beg to submit a statement of work done under this Act on the Form issued by the Home Office for the year ending December 31st, 1908.

Factories, Workshops, Laundries, Workplaces, and Homework.

1.—Inspection.

Including Inspections made by Sanitary Inspectors or Inspectors of Nuisances.

Premises	Number of		
	Inspections	Written Notices	Prosecutions
Factories (including Factory Laundries) and Bakehouses Workshops (including Workshop Laundries) and Bakehouses Workplaces	16023	476	11
Homeworkers' Premises	2608	18	...
Total	18631	494	11

2.—Defects Found.

Particulars	Number of Defects			No of Prosecutions
	Found	Remedied	Referred to H.M. Inspector	
Nuisances under the Public Health Acts :—				
Want of cleanliness	198	198	...	...
Want of ventilation	30	30	...	2
Overcrowding	8	8	...	1
Want of drainage of floors	4	4	...	...
Other nuisances	191	191	...	4
Sanitary accommodations—				
Insufficient	30	3	...	...
Unsuitable or defective...	127	25	...	1
Not separate for sexes	31	1	...	...
Offences under the Factory and Workshop Act :—				
Illegal occupation of underground bakehouse (S. 101)	...	...	...	...
Breach of special sanitary requirements for bakehouses (SS. 97 to 100) ...	99	99	...	1
Failure as regard lists of outworkers (S. 107)	...	...	...	10
Giving out work to be done in premises which are { unwholesome (S. 108)	...	...	...	...
Giving out work to be done in premises which are { infected (S. 110) ...	8	8	...	...
Allowing wearing apparel to be made in premises infected by Scarlet Fever or Smallpox (S. 109)	7	7	...	...
Other offences	791	791	...	2
Total	1524	1365	331	21

3.—Other Matters.

Class	Number
Matters notified to H.M. Inspectors of Factories :—	
Failure to affix Abstract of the Factory and Workshop Act (S. 133)	331
Action taken in matters referred by H.M. Inspectors as remediable under the Public Health Acts, but not under the Factory Act (S. 5)—	
Notified by H.M. Inspector	45
Reports (of action taken) sent to H.M. Inspectors	225
Other	180
Underground Bakehouses (S. 101) :—	
In use during 1907	57
Certificates granted { None—all cellar Bakehouses are provided with certificates.	
In use at the end of 1908	57

Homework :—	Number of Lists	Number of Outworkers
Lists of Outworkers (S. 107) :—		
Lists received	979	7627
Addresses of outworkers { forwarded to other Authorities		1003
Addresses of outworkers { received from other Authorities		160

Homework in unwholesome or infected premises :—	Wearing Apparel	Other
Notices prohibiting homework in unwholesome premises (S. 108)	...	...
Cases of infectious disease notified in homeworkers' premises	8	...
Orders prohibiting homework in infected premises (S. 110)	8	...

Workshops on the Register (S. 131) at the end of 1907 :—	
Workshops	4436
Bakehouses	589
Total number of Workshops on Register	5025

The number of cellar bakehouses now in use is 57. These have nearly all been reconstructed to specification. They are systematically inspected, as are all other bakehouses. They comply with the requirements of the Factory and Workshops Acts as regards structure. The defects found, as regards cleanliness, are given in the tabulated statement.

HOUSING OF THE WORKING CLASSES.

Particulars are given in the following tables of new houses certified as fit for human habitation in the various divisions of the City from 1891 to 1908, also in various adjoining districts.

There is a marked diminution in the number certified in 1908 as compared with the previous two years, and, if the new houses in Withington and Moss Side, viz., 583, are subtracted, the number left is 1,666, which is considerably less than the number certified in the two previous years. This diminution is doubtless due to the depression in trade and the consequent lessening in demand for houses.

The diminution in building extends over all the sanitary districts of the City, and affects every one of the seven adjoining districts for which a return is made.

A.—New Houses Certified in Outside Districts from 1891 to 1908.

Districts	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907	1908
Salford	..	254	564	454	613	883	872	1268	885	674	818	733	603	599	619	519	581	415
Eccles	141	164	109	100	118	113	165	219	202	215	215	185	244	226	323	346	218	202
Stretford	30	43	38	274	356	313	355	340	262	265	320	329	379	483	365	376	341	236
Urmston	73	45	42	34	80	102	135	88	43	18	21	24	35	106	90	50	35	40
Withington Urban District Council:																		
Withington, including Whalley Range	23	31	17	50	70	79	162	171	225	169	59	52	35	139	..	..	..	..
Didsbury	31	42	33	26	79	55	45	66	139	66	37	34	43	68	..	..	..	..
Burnage	..	..	26	21	..	1	24	13	1	14	14	59	1	..	..	..	..	..
Chorlton-cum-Hardy	81	63	10	37	94	155	182	152	55	191	220	182	247	215	..	..	..	..
Moss Side	..	..	..	..	..	..	..	119	35	403	400	314	157	234	..	..	..	..
Levenshulme	..	..	..	..	..	..	..	224	290	420	180	236	278	318	328	184	131	92
Droylsden	..	..	..	..	..	..	..	126	36	41	43	..	135	50	33	38	65	30
Gorton	..	..	..	..	..	..	..	397	411	352	353	187	402	362	391	685	519	339
Totals	379	632	839	996	1410	1701	1940	3183	2584	2828	2680	2335	2559	2800	2149	2198	1890	1354

B.—Statement as to the Number of New Dwelling-houses Certified as Fit for Human Habitation in the various Divisions of the City between 1890 and 1908.

District	1st Nov., 1890, to 31st Oct., 1891	1891 to 1892	1892 to 1893	1893 to 1894	1894 to 1895	1895 to 1896	1896 to 1897	1897 to 1898	1898 to 1899	1899 to 1900	1900 to 1901	1901 to 1902	1902 to 1903	1903 to 1904	1904 to 1905	1905 to 1906	1906 to 1907	1907 to 1908	Totals
Ancoats	31	195	54	70	7	97	113	53	25	28	33	1	4 including 1 Lodging house	11	1	46†	13‡	39	821
Central.....	Note:— 193 Artizans' Dwellings																		
St. George's ..		...	...	...	...	...	...	...	...	...	...	5	1	9	*95	...	...	...	303
Cheetham ...	8	38	76	97	37	155	269	370	315	128	253	171	199	240	133	186	226	101	3102
Crumpsall ...	17	7	18	24	44	39	37	41	18	102	53	56	82	85	57	50	60	66	856
Blackley	29	11	13	5	19	41	31	56	67	58	33	42	57	53	124	95	130	175	1039
Harpurhey ...	55	60	60	170	191	342	253	346	327	169	129	70	92	14	7	30	149	7	2471
Moston	22	12	74	89	148	193	225	263	248	282	179	78	109	156	222	327	481	394	3502
Newton	40	20	10	30	65	140	96	136	134	110	90	211	167	230	193	287	159	130	2248
Bradford	36	39	49	21	65	67	198	91	103	198	47	239	29	40	7	5	0	26	1310
Beswick	2	8	15	8	...	97	118	128	98	119	175	94	...	15	...	...	4	...	881
Clayton	6	61	6	9	39	111	152	161	229	234	164	104	107	113	103	113	112	112	1936
Ardwick	4	34	25	59	177	261	192	295	361	145	110	109	171	13	45	36	27	15	2079
Openshaw ...	177	169	65	15	60	69	71	152	119	182	80	190	145	155	91	84	108	97	2029
Gorton (West)	178	110	30	2	2	20	87	236	178	57	...	...	...	50	38	3	0	...	991
Rusholme and Kirk.	51	37	76	89	211	277	294	354	486	462	288	346	258 / 122	453	261 / 95	356	345 / 109	454	474 / 118	592	408 / 57	465	5671
C.-on-M.	26	97	97	88	18	36	46	57	1	32	48	27	12	15	5	2	1	38	646
Hulme	...	2	1	1	...	29	24	4	3	2	4	1	6	..	1	2	0	1	81
Moss Side ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	364	220	66	51	701
Withington ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	362	560	506	532	1960
City Totals ...	682	1093	669	777	1083	1974	2206	2743	2712	2308	1686	1744	1561	1652	2204	2500	2634	2249	34055

* NOTE.—Including 64 Dwelling-houses belonging to Sanitary Committee and 1 Lodging-house at Chief Fire Station.

† Including 1 Lodging-house and 44 Tenements

‡ Including 2 Lodging-houses.

A large amount of work has been done by the Unhealthy Dwellings Sub-Committee during the year. The two following tables present figures relating to the houses actually closed, demolished, or added to other houses.

RETURN SHOWING THE NUMBER OF HOUSES CLOSED, DEMOLISHED, OR ADDED TO OTHER HOUSES, THEREBY BEING DISCONTINUED AS SEPARATE HABITATIONS, WITHIN THE CITY, FROM FEBRUARY, 1885, TO DECEMBER 31ST, 1908, ALSO FOR 1908.

SANITARY DISTRICT		Number of Houses Closed, Demolished, or Added together or to other Houses		Number of Houses Closed which have not up to the present time been allowed to be re-opened		Number of Houses Closed which have been subsequently demolished		Number of Houses Closed and subsequently added together or to other Houses, thereby being discontinued as separate habitations		Number of Houses certified unfit for human habitation
		February, 1885, to Dec. 31st, 1908	1908	February, 1885, to Dec. 31st, 1908	1908	February, 1885, to Dec. 31st, 1908	1908	February, 1885, to Dec. 31st, 1908	1908	1908
entral	1	398	15	117	15	160	...	121	...	72
	2	863	31	206	24	496	3	161	4	79
	3	788	22	161	13	299	5	328	4	236
heetham ...	4	38	6	17	6	16	...	5	...	91
	5	7	...	1	.	4	...	2	...	1
	6	955	43	334	41	366	...	255	2	245
. George's...	7	460	6	170	6	219	...	71	...	69
	8	60	...	17	...	10	...	33	...	...
ncoats	9	922	7	153	3	473	...	296	4	83
art of Ancoats	10	569	8	26	1	336	3	207	4	91
eswick	10	...	.	...	...	...	...	...	...	8
ncoats	11	493	36	24	9	258	13	211	14	184
rdwick	12	424	7	50	2	199	3	175	2	89
art of C-on-M.	13	30	...	6	...	8	...	16	...	14
art of Ardwick	13	1	...	...	...	1	...	...	...	...
-on-M. ...	14	471	3	105	3	257	...	109	...	343
	15	493	...	68	...	236	...	189	...	25
	16	34	...	3	...	22	...	9	...	140
ulme	17	356	18	63	3	193	13	100	2	142
	18	644	...	67	...	391	...	186	...	142
rumpsall ...	19	28	...	...	...	9	...	19	...	...
lackley	20	28	...	26	...	2	...	...	...	...
arpurhey ...	20	15	...	...	...	13	...	2	...	...
oston	21	7	...	5	...	2	...	...	...	...
ewton	22	201	8	24	8	85	...	92	...	29
	23	65	18	31	18	14	...	20	...	68
radford	24	67	...	24	...	26	...	17	...	1
layton	25	7	7	7	7	...	...	...	...	41
penshaw ...	26	70	5	45	3	14	2	11	...	50
est Gorton ..	27	24	...	2	...	12	...	10	...	...
usholme ..	28	78	...	7	...	31	...	40	...	...
oss Side ...	29	...	...	...	...	...	...	...	...	...
Totals		8596	240	1759	162	4152	42	2685	36	2243

The above tables, however, give no real picture of the extent of the work carried on from year to year, which is now greater than it formerly was, even when the largest previous numbers in these tables were shown. The character of the work has changed. But little has recently been done in connection with back-to-back houses, to which the above figures more specially apply in previous years. The Committee have concerned themselves largely with houses other than those which are back-to-back—with houses in which the structural arrangement has been such as to interfere greatly with the movement of air in the rear of the houses, or such as to limit the amount of light available.

These conditions have often been greatly aggravated by the presence of pail-closets in the narrow spaces at the rear, and by extensive disrepair in the dwellings.

During the year ending April 30, 1908, 2,680 houses were certified as unfit for human habitation, all of which were visited by the Housing Sub-Committee, and 2,555 were ordered to be closed. The number certified during the year ending December 31, 1908, was 2,243. It is true the greater number of these orders were not enforced, the great majority being altered, without closure, according to plans prepared by the City Surveyor or by the owners.

In these plans, however, not only is provision made for increased lighting and ventilation, but the yards and passages must be properly paved, yard walls repaired or reconstructed, house and passage drains, if defective, reconstructed, and all disrepair made good.

In the following table is seen, for each year, the rate at which Insanitary Dwellings have been closed since 1885.

RETURN SHOWING THE NUMBER OF HOUSES CLOSED, DEMOLISHED, OR ADDED TO OTHER HOUSES, THEREBY BEING DISCONTINUED AS SEPARATE HABITATIONS, WITHIN THE CITY IN EACH YEAR FROM FEBRUARY, 1885, TO DECEMBER 31ST, 1908 (JANUARY TO DECEMBER IN EACH YEAR).

	1885 (From February)	1886	1887	1888	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907	1908	Totals
Number of Houses Closed, Demolished, or Added to other Houses..	56	103	117	191	282	165	287	564	509	782	710	508	284	296	641	266	58	346	305	378	289	218	1001	240	8596
Number of Houses Closed which have not up to the present time been allowed to be re-opened....	...	4	11	15	39	11	38	56	108	57	54	48	31	43	145	44	11	75	63	84	55	45	560	162	1759
Number of Houses Closed which have been subsequently demolished	46	71	55	113	170	75	120	279	195	511	425	298	185	154	307	142	37	119	130	167	162	84	265	42	4152
Number of Houses Closed and subsequently added together or to other Houses, thereby being discontinued as separate habitations	10	28	51	63	73	79	129	229	206	214	231	162	68	99	189	80	10	152	112	127	72	89	176	36	2685

More difficulty is, in reality, experienced in getting these houses altered than in getting back-to-back houses satisfactorily adapted. As a rule, on the demolition of a certain number of dwellings, or, perhaps, by taking in a piece of ground on one side of the double row, back-to-back houses can be converted into through ones. The different modes in which these changes can be effected proceed on well-established lines and according to definite principles.

It is, however, a much more difficult matter to obtain alterations in two rows of houses closely approximated in the rear. Not seldom, to get entirely satisfactory results as regards ventilation and light alterations are needed as drastic as those carried out in the case of back-to-back houses. Even when smaller changes are carried out, to secure a reasonable access of light and a sufficient movement of air it becomes necessary to remove small bedrooms projecting in the rear of the dwellings. It is then held by some that more is lost in the destruction of these additional bedrooms than is gained in the admission of light and air. It is certain that these dwellings are not adapted to house so many inmates as they do, although in many instances the loss of a small bedroom in the rear would be compensated for by the use of the parlour as a bedroom.

Then again difficulty is experienced in getting end houses, which obstruct the passages, cleared away.

Nevertheless a large amount of work has been effected at the cost of much labour. The Housing Committee visit every house which is certified by the Sanitary Superintendent, and form their opinion on it. They subsequently hear any objections to closing advanced by the owners, and pass resolutions. Finally they pass plans of alterations which in their opinion will enable the owners to avoid having a closing order enforced, or will allow houses already closed to be reopened.

Not only, however, is this large amount of work being done by the Committee. A large work is also being carried out by the Staff of the Sanitary Committee in altering pail-closets and middens to water-closets. In many cases these alterations in their turn entail the relaying of yard and passage drains, and of surfaces, and always when this has not previously been done. The greater portion of this work is carried out voluntarily by property owners, who receive a sum of £2 for each pail-closet converted into a water-closet.

The magnitude of this work in 1908 is seen from the following figures:—

Number of Pail-closets and Midden Privies altered to Water-closets, from April 1st, 1908, to March 31st, 1909.

	Number of Pail Closets altered to Water Closets	Number of Midden Privies altered to Water Closets	Total Number of Pail Closets and Midden Privies altered to Water Closets
From April 1st to April 30th, 1908 ..	494	292	786
,, May 1st to May 31st, 1908 ..	822	414	1,236
,, June 1st to June 30th, 1908..	699	344	1,043
,, July 1st to July 31st, 1908...	823	244	1,067
,, Aug. 1st to Aug. 31st, 1908...	640	432	1,072
,, Sept. 1st to Sept. 30th, 1908..	1,050	216	1,266
,, Oct. 1st to Oct. 31st, 1908 ...	916	303	1,219
,, Nov. 1st to Nov. 30th, 1908 ..	935	157	1,092
,, Dec. 1st to Dec. 31st, 1908 ...	880	118	998
,, Jan. 1st to Jan. 31st, 1909 ...	854	120	974
,, Feb. 1st to Feb. 28th, 1909 ..	784	123	907
,, March 1st to March 31st, 1909.	1,184	81	1,265
	10,081	2,844	12,925

Number of Midden Privies altered to Water-closets, from April 1st, 1908, to March 31st, 1909.

Number of Midden Privies in existence, April 1st, 1908	Number of Midden Privies altered to Water Closets from April 1st, 1908, to March 31st, 1909.	Number of Midden Privies remaining to be altered to Water Closets
6,554	2,844	3,710 (exclusive of Withington).

Number of Pail-closets altered to Water-closets from April 1st, 1908, to March 31st, 1909.

Number of Pail Closets in existence, April 1st, 1908	Number of Pail Closets altered to Water Closets from April 1st, 1908, to March 31st, 1909	Number of Pail Closets remaining to be altered to Water Closets
44,664	10,081	34,583

It will be seen that the closet, and, when required, the drainage, alterations effected in 1908 affect a population of close on 60,000 persons. If these changes have not been immediately reflected in the death-rates, this is due in large measure to the extreme poverty which has pinched the population during the year. They are bound to show a result, however, at no distant time.

Rapid as the rate of alteration has been, it is retarded by at least one important consideration—it is no use altering the closets of insanitary dwellings. The conversion of closets, therefore, entails a scrutiny of the general sanitary condition of the houses, and, if this is not regarded as satisfactory, the conversions are arrested until the fitness of the dwellings for human habitation has been considered. This necessary co-operation between the two branches of the work has not always been so carefully sustained as it now is. But as things are now, it is bound to retard in some measure the speed of conversion in the more insanitary houses.

When houses have been closed, the owners have from time to time determined that they would make no effort to adapt them and reopen them as dwellings, and they have utilised them as workshops. There is nothing to prevent this, and if they can be made to fulfil the requirements of the Factory and Workshop Acts they continue to be used as workshops. It would seem as if the fact were not sufficiently recognised that certain insanitary conditions in a workshop are more injurious than in a dwelling, on account of the larger amount of air inhaled and exhaled during work. This, however, is a circumstance which should cause the use of such dwellings as workshops to be carefully scrutinised.

It remains to be seen whether the policy which the Housing Sub-Committee have pursued for a great many years will yield results commensurate to the efforts bestowed upon it. I believe that it will.

The greatest drawback to the course at present pursued is the impossibility by the alterations carried out, of rendering the houses altered (practically all of them without damp-proof courses) quite free from damp in the lower portion of the walls. Nevertheless, if great attention be paid to paving and good

drainage—the immense importance of maintaining impervious surfaces and unbroken drains being fully realised in practice—this difficulty may be largely got over. But the utmost vigilance is needed.

For the same reason it is absolutely essential that the subsoil pollution which has been so long in progress, from the defective foundations of pail-closets (or ash receptacles) and from the soakage of animal manures and other impurities into the soil, should be brought to an end, the danger from human excreta, as apparently the greater one, being first dealt with.

The feature of these alterations which is least satisfactory is the small extent to which the long narrow interspace in the rear of houses is cut across by the removal of houses. Only by such intersections at fairly short distances can the defective movement of air in the rear of the houses be effectually counteracted. It must be admitted also that the deficiency of light cannot thus be entirely repaired. As already mentioned, the removal of small bedrooms over sculleries is itself objected to, on the ground that every bedroom in the house is often urgently required. In fact, to entirely overcome the sanitary shortcomings it would be necessary in some instances to remove every third house. It would, however, be impracticable to carry out such an extensive alteration without assistance to the property owners.

The gain achieved by the alterations at present carried out in this class of house is that the obstruction to movement of air is partially removed, lighting is improved, the drainage is made good, the surfaces are relaid, pail-closets are replaced by water-closets, and ash-bins with covers are substituted for the insanitary wooden box. Structural defects are repaired, and defective brickwork is pointed. In a considerable number of instances, moreover, the alterations involve the provision of fairly large and good yards.

Thus a great improvement is being effected, and undoubtedly the non-insistence on a more rigorous standard in regard of ventilation and lighting enables the other changes, especially the provision of water-closets and ash-bins, to be carried out more quickly.

This arises from these circumstances :—An allowance of £2 for each pail-closet altered to a water-closet is made by the Sanitary Committee to the owner, but this allowance is not made unless the alteration has been carried out under the supervision of the Sanitary Department. During the past year an arrangement was made, in virtue of which all cases in which the property on which it is proposed to change the closet system, and which, by reason of its arrangement or structure is not in a sanitary condition, is referred to the City Surveyor's Department, and where other alterations are required, the property is notified or certified to the Housing Sub-Committee.

Thus, in the case of houses markedly deficient in the rear, in respect of light and ventilation, the sanction of the Corporation to closet alterations would not be given, nor any payment made in respect of closets, until the houses were themselves so altered as to be in the opinion of the Committee fit for human habitation. The degree of stringency of the housing requirements thus determines the amount of closet and other alterations.

No scheme for the erection of dwellings has been carried out during the year, nor has any presentment in respect of an insanitary area been made.

The scheme for erection of tenements on the Barrack Street site has not been proceeded with, partly, at all events, on account of the strong objection entertained in Manchester against what have been nick-named "barrack dwellings." At the same time apprehensions have been entertained that the practice of sub-dividing houses into tenements is progressing. There can be no doubt that such sub-divided dwellings are far less wholesome than the tenement dwellings erected by the Corporation. Not only are they generally sub-divided in such a manner that a family occupies only one room, but the different families use one common closet. The rooms are approached by common internal staircases, the landings not giving on an external wall. In a number of instances the families have the common use of a kitchen. There is not nearly the degree of separation of families which exists in a well-contrived tenement block. If, therefore, there is a tendency in tenement dwellings to increase of infectious disease, this tendency is much augmented in the case of sub-divided houses. Moreover, tenement dwellings erected and managed by the Corporation are placed under the care of a servant of the Corporation, while a considerable section of the sub-divided houses have no resident tenant, and cannot be considered to be efficiently looked after. The question therefore arises, how far, if tenement dwellings were erected, could the persons occupying sub-divided houses be induced to remove to them ?

There is no legal enactment by which the sub-division of houses can be restrained, or by which the owner can be compelled even to provide a caretaker; nor is there any enactment under which the provision of closets can be dealt with. It is plainly desirable for sanitary reasons that each family should have a separate water-closet, but there is little likelihood that such a bye-law would be granted for houses let in lodgings, and, in fact, in some instances, such a bye-law would inflict undue hardship on owners.

Unless, therefore, the sub-divided houses were declared unfit for human habitation and ordered to be closed, there is no security that any relief would be afforded in respect of the sub-division of houses. Only when they are overcrowded, or when the closets are grossly in defect, can any action be taken.

Most sub-divided houses are not so insanitary that a closing order against them could be made. So far, therefore, as these houses are concerned, the tenement dwellings need not necessarily afford much relief.

There is another reason why they might fail to attract the occupants of the sub-divided houses. Many of the rooms in these are let "furnished," and, though the furnishing is of the poorest description, not a few persons are found willing to take such rooms at a high rent, hoping doubtless at a future time to be able to get a house of their own, or for other reasons.

Nevertheless, houses sublet in tenements do present distinct disadvantages, which make them far inferior to tenements in blocks. The water supply is, in common, either outside the sub-divided house or in a common kitchen, and a distinct barrier to cleanliness is thus interposed. Often there is no convenience for the cooking of food, which again has to be done in the common kitchen. Where there is a resident tenant this difficulty may or may not be increased.

The common staircases are often inadequate in width, and, where the landings do not abut on an outside wall, there is no effectual ventilation of the common space.

It would be reasonable to require—

that the doors of all tenements shall open on to a landing in free communication with the open air, by means of windows or openings in an external wall at the same level as the tenements;

that the common staircase shall be adequately ventilated by a window in the roof, made to open;

that the conveniences shall be water-closets conveniently accessible to the inmates, and so that there shall be at least one closet for every twenty persons;

that there shall be a water-tap on each landing for the use of the tenements;

that the staircases shall be of a defined adequate width.

Again, there is a lack of small suitable dwellings for newly-married people, as well as for old people, and provision could well be made for this class of persons in tenements. In fact, small dwellings are in demand.

There is, however, reluctance on the part of the Council to sanction a scheme for the erection of dwellings, in the present state of the public finances, unless it can be shown that they will entail the minimum of financial loss. On the

other hand, it is just at a time like the present that private builders are deterred from making the housing provision required by the increasing population, and, in fact, they have not shown any disposition to attempt providing small dwellings of the tenement class, no doubt because they are not financially profitable. Public schemes for the provision of suitable schools cannot, without detriment to the scholars, be held in abeyance. Houses are being taken down for private works.

It is by no means clear that trade depression is a reason for not pursuing housing schemes. It follows from the present hesitation to erect tenement dwellings that the remaining back-to-back houses tend to remain undealt with, since it is felt, rightly or wrongly, that, if these are closed, and in part demolished, further provision must be made for the persons displaced. In fact, it is probable under existing conditions of trade, that, if these dwellings are closed, the families inhabiting them may have to find rooms in houses already tenanted, until they are in a position to take houses for themselves. Yet it is now conceded that back-to-back dwellings are unfit both on sanitary and other grounds.

The question of the kind of provision which should be made by the Corporation for persons displaced by the action of the Sanitary Committee, or of the Education Authority, is one which has greatly exercised the Housing Committee. On the one hand, there is a certain amount of prejudice on the part of the public against tenement dwellings, notwithstanding the recourse of a good many poor families to a much inferior kind of accommodation in sub-divided houses. There is, however, also an impression that, when persons are gathered in tenement blocks, so that the number is high in proportion to the area covered by the buildings, injury to health must necessarily result. On the other hand, land in the centre of the City is scarce and dear, so that, in providing accommodation, it is needful to have regard to the number which can be accommodated on a given area. With this class of dwelling supervision is easier. Also, the type of dwelling can be varied in the same block.

It is not necessary to do more than allude to the popular prejudice, which is probably diminishing, but it seems desirable to consider whether there is, in fact, good reason to think that the collection of people in tenement dwellings is bad for the health of the inmates.

This subject was dealt with in a report presented to the Housing Sub-Committee, in which it was shown, from the experience of London, that tenement dwellings do not *per se* lead to increase in the death rate of their inhabitants.

On the 8th of May, 1908, the revised building bye-laws came into force. These new building bye-laws were the subject of much consideration on the part of the Improvement and New Buildings Committee and of the officials, and were carefully revised by the officials of the Local Government Board.

A conspicuous feature of these bye-laws is the great increase of space provided in the rear of dwellings.

Amongst the sanitary requirements introduced may be mentioned the provisions for the lighting and ventilation of habitable rooms, and for the lighting and ventilation of staircases.

An important requirement is that the chimney of a scullery or other similar building adjoining a dwelling-house, shall be carried to a height of 3 feet above the eaves, unless it is used to convey only fumes from smokeless fuel.

Bye-law 80 again requires all receptacles for ashes to be of galvanised iron or other suitable impervious material fitted with a rain-proof cover, of a definite size, and not in the aggregate to contain more material than can accumulate in one week.

The Housing Bill, 1909, greatly extends the power of local authorities in dealing with insanitary dwellings. It prohibits the building of back-to-back dwellings, so indirectly condemning this class of habitation, and provides machinery for town planning schemes and for the co-ordination of local authorities concerned. It also provides for the appointment of a Medical Officer of Health in every county, and foreshadows an increase in the duties of that official. An important feature of this Bill is the survey of dwellings which Sanitary Authorities must make and record on a Schedule. Such a survey will furnish a decided impulse to progress, and the records may be made a register of improvements effected.

The above statement gives rise to questions of considerable interest.

Is the kind of work at present pursued in Manchester such as greatly to improve the sanitary condition of the City, if carried on with sufficient energy ? Under the conditions already named I believe that it is, provided that it is so distributed as not to fall at one time on any district in such amount as to lead

to overcrowding in the district. It will be seen, however, that the number of houses disused is not such as to produce any such result. It was strongly held by Alderman Walton Smith that these piecemeal operations, even when a large number of back-to-back houses were closed, pulled down, or added to other houses, did no more than produce temporary overcrowding, the added pressure serving to cause a wave of migration outwards, and stimulating the erection of new dwellings on the outskirts.

This must not be taken as an expression of opinion as to what would happen under all circumstances. The extent to which it happens will depend on the distance of the outskirts, and the comparative degree of prosperity of the working classes. It will also depend on the social habits of the people. The question is rather what happens under the circumstances holding in Manchester. This can be put to the test of figures.

We find on reference to the Census Figures for the whole City that, in spite of the large number of small houses condemned, or otherwise removed, in the decade 1891 to 1900, there was a diminution of overcrowding in every class of small dwelling during that period. The relative diminution in number of small dwellings is shown in the following figures :—

The percentages of one-roomed, two-roomed, three-roomed, and four-roomed tenements at the respective Censuses were :—

	1891.		1901.
One-roomed tenements	1·55	....	1·90
Two-roomed ,, ...	9·70	....	6·09
Three-roomed ,, ...	5·16	....	4·43
Four-roomed ,, ...	39·0	....	42·15

The percentages of each class having more than two persons per room, were :—

	1891.		1901.
Of One-roomed tenements	30·36	....	21·03
Two-roomed ,, ...	24·92	....	19·03
Three-roomed ,, ...	16·21	....	13·04
Four-roomed ,, ...	4·73	....	4·39

Now the one, two, and three-roomed tenements are to be found chiefly in the older parts of the City, in which the alterations have been in progress.

We must infer, therefore, that these operations have not in fact led to overcrowding, and that the reverse has happened, even in the districts in which the operations of the Housing Sub-Committee have been most extensive. Of course, it does not follow from these figures that overcrowding has not resulted in some districts. But the aggregate fact is diminished crowding, and it is clear that, on the present scheme of operations, much more can be done without any untoward effect in this direction.

This is a clear advantage in favour of the present policy of detail alterations, if these are properly distributed and arranged with sufficient regard to the enduring satisfaction of housing requirements. When the houses on an area of any magnitude are closed at one time, or nearly so, overcrowding is necessarily produced in the immediate neighbourhood, unless there are houses ready to receive the persons displaced. When a large scheme of re-housing, involving a number of areas, has been planned out, it can be adjusted so that one area is condemned as the new buildings on another are completed. Generally, however, re-housing is not planned out in this manner, and, unless a vacant plot has been occupied by new dwellings, there is real dislocation when an area is closed.

Owing, however, to the extensive alterations which have been carried out under the Local Act, it may be assumed that no general scheme for the removal of houses from a number of areas is likely to be accepted by the Council.

On the other hand there remains a vast area of insanitary dwellings which require to be dealt with.

The essential difficulty in this case is that the great bulk of the expense falls on property owners. This is not unjust, since, except in the case of back-to-back houses, the alterations exacted are in the main such as are needed to keep the houses in good structural condition, and otherwise to make them reasonably fit for habitation. Great hardship is, however, occasionally entailed, and this reacts on the work of the Committee, tending to lower the standard of requirement and to foster resistance.

But although any considerable scheme of dishousing is not likely to be immediately adopted, there are dishousings of small areas due to the clearing of school sites, warehouse sites, and so forth, and some dishousing due to the work of the Sanitary Committee.

Nor are any houses being erected so small as many of those which have been closed.

It cannot be doubted that some degree of inconvenience has thus been entailed, both from the scarcity of small tenements and from the enhanced rent of those which are left. This scarcity of small dwellings bears most hardly on young married couples, on married persons without children, and on old people. Allowing that the first class of persons could often take a four-roomed house, there are still many persons who might usefully occupy a two or three-roomed dwelling. These are the persons who have been most seriously inconvenienced by the dishousing operations already carried out. For these the most appropriate provision could be made in tenements. How far would the provision of a better-class cottage help in the re-housing of the poor families dishoused ? It could only do so indirectly. That is to say, there is a gradual shifting of houses, persons dishoused occupying houses which have been vacated as the result of the provisions made. Time is necessarily lost in such a readjustment, though time is generally lost in readjustments.

If better-class working houses were erected by the Corporation to replace poorer houses, after the process of readjustment has taken place, there would still be some persons left who cannot be fitted with dwellings so small as those which they have vacated. How far is this a severe hardship ? It is certain that many persons who occupy very poor homes are usually earning enough to enable them to take larger and better houses, if reasonable economy were exercised. To this extent it is an advantage to erect only houses of a better class. What this extent is can only be gauged by a house-to-house inquiry.

If, on the other hand, a mixed class of tenement is to be closed, it is an advantage to know what are the numbers of tenements to be vacated, of one, two, three, and four-rooms respectively. The kind of information which we need in respect of houses about to be closed is, therefore :—(1) The number of rooms in each tenement ; (2) the size and constitution of the families occupying these ; (3) the earnings of the family ; (4) their place of work and its accessibility. Such information should be available for all houses in respect of which a closing order has to be enforced.

An inquiry was carried out in respect of St. John's Ward in 1907, a district in which the death-rate is persistently high, and in which there are many houses sub-divided into tenements. There are only two districts in the City of which this can be said, and St. John's Ward forms the major part of one of these.

This inquiry threw light on many social conditions, as well as on the conditions of housing.

For the purpose of this inquiry the district was sub-divided into 12 portions, and house-to-house visits paid were recorded on a form. The facts for each sub-district were taken out separately.

Taking the district as a whole, the houses inspected numbered 1,112, comprising 805 private houses, and 205 houses sub-let in tenements, in 152 of which the tenant was resident. The remaining 53 were "farmed" houses, that is to say, had no resident tenant. There were 44 common lodging-houses and 58 public-houses.

The 805 private houses contained 3,859 inhabited rooms, and 3,726 persons. The 205 sub-divided houses contained 1,193 rooms and 1,824 persons. The 44 common lodging-houses contained 1,311 persons, and the 58 public-houses 261 persons.

The populations were sub-divided in age groups, 0–3 years, 4–14, 15–64, 65 and upwards. There was not a very great difference between the distribution of the general population of the City and that of the private houses, and the distribution of the population in the tenements generally approximated very closely to that of the whole population. In "farmed" houses, however, there was a rather high proportion of children up to 3 years of age, and a markedly low proportion of children from 4 to 14, as though many young people started their married life in " furnished " rooms, and afterwards took houses of their own.

The more outstanding defects of the tenement houses were the common closet, the common water-pipe, and the common staircase.

The sanitary defects observed were very numerous. Of the 805 private houses 115 were considered by the observers to be unfit for human habitation, while of the 205 sub-divided houses only 3 were thus characterised. The sanitary defects included:—(*a*) In private houses instances of overcrowding noted 15, dirty house 47, ill-lighted 107, water supply unsatisfactory (generally through being outside the house) 192. In 64 houses the inmates were very poor, and in 89 there was serious sickness. The houses were supplied in 517 instances with pail-closets, in 285 with water-closets. (*b*) Tenement houses 205, containing 655 tenements. Number of tenements overcrowded 9, number dirty 39, ill-lighted 7, water supply unsatisfactory 53. In 59 there was poverty reaching privation, and in 46 serious sickness. Of the tenements 62·4 per cent. contained furnished or partly-furnished rooms, and 37·6 per cent. unfurnished rooms.

The rents paid for these houses varied considerably. For private houses of two rooms, the range was from 2/6 per week to 5/-, the mode being at 3/6; for three rooms the range was from 2/6 to 7/-, the mode being again 3/6; for four rooms the range was from 2/6 to 7/6 and upwards, the modes being at 5/- and 6/-. For houses of five rooms the mode was probably at 6/-. Of rooms above five the mode is not determinable in this manner.

In tenements we have to distinguish between furnished and unfurnished. For *unfurnished tenements* of one room the range was from 1/6 to 4/6, the mode 2/6; for two rooms, the range was 2/6 to 5/-, the mode 3/-; for three rooms the range was 3/- to 6/-. For *furnished tenements* of one room the range was 2/- to 7/6 and upwards, the mode 5/-; of two rooms, the range was 3/6 to 7/6 and upwards, the mode indeterminable.

It is of interest to see the extent of inconvenience which would accrue if the population of a district like St. John's Ward were to be dishoused, so far as access to the places of occupation of the workers is concerned. This is shown in the following table, which classifies families according to the work-places of their members. The families number 600, and it will be seen that if the families had to move to a distance exceeding from half-a-mile to a mile, over half would suffer inconvenience and some 200 would be seriously inconvenienced. The degree of inconvenience sustained depends on the circumstances of the population, and it is therefore important to observe that 173 of these families are stated to be under conditions of privation.

Whether anything approaching this degree of inconvenience would be experienced depends on the number of empty houses available, and as this number is usually largest when business is bad, there is something on this score to be said for clearing areas in times of distress rather than when the City is in a prosperous state.

ST. JOHN'S WARD.

Analysis of Special Investigation showing Classification of 600 Families according to the Place of Work of the Members.

	Total	Circumstances	
		+	−
*Home workers only	92	84	8
Take lodgers only	3	2	1
*Workers in the district only	96	56	40
*Workers near the district only	82	49	33
Workers at some distance only	102	58	44
*Workers at home and in the district	15	12	3
*Workers at home and near the district	17	17	—
Workers at home and some distance away	19	15	4
*Workers in and near the district	44	31	13
Workers in the district and at a distance away	48	39	9
Workers near the district and at a distance	54	40	14
*Workers at home, in, and near the district	—	—	—
Worker at home, in, and some distance away	2	2	—
Worker at home, near, and some distance away	9	8	1
Workers in, near, and some distance away	15	12	3
Worker at home, in, near, and some distance away	2	2	—
	600	427	173

* Workers at home, in the district, near the district; at home and in the district; at home and near the district; in and near the district; at home, in, and near the district—346. Families having all the workers at home or in the district number 203.

In this statement no fixed circle marks the term *some* distance. Those at some distance are outside the district, but in a zone convenient of access, the distance from the district varying from half-a-mile to a mile. Those at a distance are outside this zone.

The following is an analysis of the occupations pursued by persons actually engaged in work, living in private houses A, and in sub-divided tenements B :—

	Males		Females	
	A	B	A	B
Labourers	188	126	—	—
Dock Labourers	9	22	—	—
Drivers (Carters, Cabmen, etc.)	124	37	—	—
In Cleansing Pursuits	19	8	5	2
Hawkers	11	12	7	4
In a Shop	43	1	40	2
Food and Tobacco	53	10	25	3
Making Clothes	51	18	41	37
In a Warehouse (not Labourers)	68	15	32	7
Skilled Occupations	229	66	115	17
Sailors, Boatmen, etc.	17	12	—	—
Caretakers	19	—	—	—
Boys, Apprentices,	45	13	—	—
Others	137	52	45	19
	1,013	392		
Charwomen, Office Cleaners, etc.			63	42
Washerwomen, Laundresses			12	31
Girls			5	2
Servants (including Housekeepers)			48	—
			438	166

On comparing the occupations of those living in private houses with the occupations of those living in sub-divided houses, it will be seen that on the average the latter belong to a lower class of workers. The difference is greater than appears from the figures, since practically all the employers, shopkeepers, etc., are in Class A. A large number were said to be out of work, at least temporarily, but these are not classified.

As regards skilled occupations, a large number of those so classed were in printers' establishments. The term comprises weavers, spinners, fustian cutters, iron moulders, machinists, seamstresses, etc.

Unskilled labour, it will be seen, considerably predominates.

In a number of instances the occupations pursued could not be ascertained.

On the whole the class of work is not such as to entail poverty so severe as is prevalent in this district, and there are certainly other causes at work, probably social. The amount of sickness prevailing is dependent partly on sanitary conditions, partly on personal habits, partly on the extent of the poverty. In a former investigation it was shown that the amount of sickness was excessive.

The death-rate experienced by the inhabitants of this district has not been taken out separately. We may, however, assume that it is not less than that of the Central Sanitary District generally, which is higher than that of any other Sanitary District. This throws but little light, however, on the sanitary condition of the houses. Between one-fifth and one-sixth of the inhabitants live in common lodging-houses, and the mortality amongst these persons is very high. The effect of this must be greatly to raise the mortality.

If we turn to the figures for the deaths under one year of age per 1,000 children born, we again find that the figure is higher for the Central District than for any other. This is partly due to the high proportion of women living in common lodging-houses, and in sublet rooms. On the other hand, the home death-rate per 1,000 persons living in the district, that is, the death-rate of persons who can afford the luxury of dying at home, is lower than in other parts of the Manchester Township, and lower than in many other districts. The significance of this figure is diminished in this district, however, by the large proportion of persons who are in deep poverty, and who, in severe illness, seek the refuge of the Union Hospital.

We may, however, from these figures form a rough estimate of the sanitary conditions, which we must regard as not worse than those of St. George's and Ancoats, while the social circumstances are decidedly worse.

Owing to the operations of the Housing Sub-Committee, and from other causes, this district has undergone considerable improvement in recent years. It is certainly susceptible of much more.

The housing conditions are complicated by the high proportion of common lodging houses, most of them old, insanitary, and occupied by a very poor class of persons. There is also a large population in houses sublet in tenements, a mode of occupation of houses which is essentially insanitary. In addition, there are a number of narrow and dark streets in the district, while many of the houses are very old. Provided, however, that the unhealthy portions of the district are dealt with in a sufficiently stringent manner, it should be possible to bring both the private and sublet houses into a fairly healthy state. It will not be so easy to demonstrate the improvement. But this also could be done if a census were taken from time to time of the number, sex, and age of the occupants of different classes of dwelling.

In conclusion, it may be assumed that at present there is no prospect of any large scheme involving compensation being adopted in Manchester—and it would need to be a large scheme to be of much avail. This being so, it is desirable that the work of the Housing Sub-Committee should proceed as energetically as possible, the alterations required being such as to render them of abiding value and able to stand future criticism. The chief difficulty arises in the case of rows of houses with little space in the rear.

There is no need to fear any great difficulty in the re-housing of persons displaced by these alterations, carefully distributed as they are. It is when the removal of houses affects tenants of one, two, and three-roomed tenements (or houses) that difficulty arises, or when the displacement of persons in four-roomed houses affects larger areas. For the former class of displacements it is tenements that are needed; for the latter the provision of cottages some distance from the centre should meet the requirements.

STATEMENT OF THE WORK OF THE HEALTH VISITORS IN 1908.

By Miss Eleanor Greg, Lady Superintendent.

The reorganisation of the relationship between the Ladies' Public Health Society and the Public Health Office, briefly indicated in the Annual Report for 1907, has been accomplished, and since March, 1908, the Health Visitors have been entirely in the service of the Corporation.

The gradual change in the character of the Health Visitors' work has rendered this development almost inevitable. The friendly calls of the untrained Visitor of the early days of the Ladies' Public Health Society have little by little been

superseded by more systematic visits, requiring a trained intelligence equal to the delicate task of instructing mothers in the rearing of infants, in household management, etc. It is most satisfactory to be able to state that some of the early Visitors have been fully capable of adapting themselves to the more onerous responsibilities which have gradually been demanded of them.

After being taken over from the Ladies' Public Health Society, the Health Visitors' Staff consisted of two certificated Visitors receiving 30s. per week; four of the old staff, whose salaries were raised by the Corporation from 16s. to 20s.; and six of the old staff, whose salaries were increased from 16s. to 18s. A graduated scale of payment was thus immediately established, by means of which it is hoped that promotions, according to merit, may be made from time to time. During the year two of the old staff gave up the work, and these were replaced by two new Visitors, who receive 30s. per week. The importance of this progressive policy cannot be over-estimated, and its continuance and extension are undoubtedly vital to the best development of the work.

Three of the Health Visitors have during the year been studying for the certificate of the Royal Sanitary Institute, and one, whose examination took place in the autumn, obtained the Sanitary Inspector's Certificate. She subsequently applied for an increase in her 20s. salary, but on only being granted 3s., has since resigned her position, and has been appointed Health Visitor under the Stockport Corporation at a higher salary, rising to £2 per week.

In reviewing the year 1908, the former standing of the Health Visitors must be borne in mind, for much time has been occupied in systematising their work, in setting standards to which all should try to conform, and in endeavouring to attain a higher degree of accuracy than before. The achievement of these objects has quite recently been facilitated by the provision of an office, so that the Visitors are no longer obliged to keep papers or draw up their reports at home. It is now therefore possible to maintain a fairly complete supervision of this part of their work.

In March, 1908, a leaflet was drawn up specifying the hours of work and general duties expected of the Visitors. In accordance with this instruction they spend the morning, as well as about an hour and a half in the afternoon, on their districts, and present themselves at the Public Health Office at 4 p.m. to write up their reports and plan the next day's work, leaving at 5 o'clock. At this time also they have the opportunity of seeing the Superintendent, who issues instructions or makes suggestions regarding their work. The reports

are carefully examined, and any unsatisfactory ones are returned; in this way their value has been slowly increased, and though in some cases they still leave much to be desired, the improvement is striking when one refers to the reports previously made. Inefficient clerical work by no means always indicates bad work in the district, and one or two good Visitors do themselves scant justice on paper. The personality of the individual, her practical knowledge, together with the ability to communicate it to others, and her sympathetic interest in the people, are what primarily go to constitute a good Health Visitor. At the same time good and clear reports on work done must always be regarded as essential.

Several of the Visitors have rendered very useful clerical assistance during the year, thus not only relieving the general Office Staff of a good deal of purely mechanical copying, but also affording them training in neatness and accuracy, as well as giving them an occasional change from outdoor work.

In this connection Miss Sefton's useful services deserve acknowledgment.

In addition to the continual instruction of the Health Visitors on special difficulties as they arise, efforts have been made throughout the year to increase their efficiency by means of general addresses on subjects relating to their work.

The work of the Health Visitor comprises:—

1. The visiting of infants under 12 months of age, and the instruction of mothers in all matters relating to the welfare of the child, especially as regards feeding (the importance of seeking medical advice before weaning, the preparation of suitable artificial foods, storage of milk, bottles, etc.), in cleanliness, clothing, regular habits, exercise, and in urging the provision of fireguards, non-inflammable clothing materials, and cots. Advice as to infants is to be regarded as the most important part of the Visitor's duties.

2. The visiting of notified Phthisis patients, and their instruction in methods of dealing with expectoration, in the damp cleansing of house and furniture, in the regular quarterly disinfection of the patient's rooms, clothes, bedding, etc., and in the importance to patients of fresh air, good food, warm clothes. The instruction of patients is insisted upon as to the necessity of expectorating into suitable receptacles, and not coughing into the air, when near other people. Further, all consumptive persons,

and persons handling articles of clothing or other articles used by consumptives, are instructed in the necessity of washing their hands, especially before meals, and of keeping separate table utensils for the use of the patient.

3. A systematic house-to-house inspection of the districts, to discover, and where possible to remedy, the simpler sanitary defects. Attention is paid to any outside defects of walls, roofs, rain pipes, drains, yard surfaces, condition of closets, etc., and to inside defects, such as dirt, dilapidation, overcrowding, want of light and air, damp ; to the evidences of bad health, of defective storage of food, of insufficient or unsuitable food and clothing ; and endeavours are made to show the housewife, by practical suggestions and demonstrations, how many of these difficulties may be overcome. Lime-washing is encouraged, especially of yards, and in suitable cases lime and brushes are provided.

4. The filling-in of such death cards as are entrusted to her.

5. Keeping a record for the Public Health Office of the Mothers' Meetings or other work undertaken for the Ladies' Public Health Society on the half-day spent in the service of the Society. The average number attending any Mothers' Meeting is mentioned, as well as the matters dealt with at each Meeting.

6. Such other work as may from time to time be required by the Medical Officer of Health.

In drawing up reports, the Health Visitor is urged to make them full and accurate, and to be sure that she has fully grasped the meaning of the information received ; that nothing be recorded from hearsay, and that information be as far as possible verified.

In the course of the house-to-house inspections, the Health Visitors bring as much pressure as possible to bear against temporary or removable dirt of all kinds, and make suggestions as to domestic order and method, as to cheap and nourishing foods, fresh air, cleanliness, and the management of children ; and they do not spend very much time over sanitary defects, which, however, are noted. If the latter are not remedied after a friendly appeal from tenant to landlord, the more serious ones are referred to the Sanitary Department, but it is satisfactory to observe that, after attention has been called to them, many defects are removed, either by the tenants themselves or by the landlord.

The greater part of the Health Visitors' time is devoted to infant visiting; during the Diarrhœa season, in fact, all house-to-house work was suspended, so that greater attention might be directed to the babies. The advice given is almost invariably received in a friendly spirit, and is often spontaneously sought; and although it is by no means always acted upon, one is beginning to feel that failure to follow the right lines is, oftener than formerly, the result more of carelessness or indifference than of ignorance; while, if wisely administered, the new Children Act may be able to cope with the careless and indifferent parents.

The inquiry undertaken in many of the large towns on behalf of the Home Office into the employment of women and its relation to infant mortality has, in Manchester, been confined to Ancoats. The five Ancoats Health Visitors have thus been acquainting themselves with the home conditions of all the children born in their districts during 1908; but the inquiry will not be completed until the end of 1909, since it is intended to follow the history of each child to the age of 12 months. Much time and trouble have been taken to ensure the accuracy of these returns, but it is often difficult to elicit the required information with certainty. The inquiry is a good training for the Visitors engaged upon it, in methods of investigation.

An immense gain has been effected during the year by a weekly notification of births, sent in voluntarily by Midwives to the Medical Officer of Health, so that the Health Visitors are now able to visit a very considerable percentage of babies at between two and three weeks old, instead of having to wait for the District Registrar's notifications, which often involve a delay of eight or ten weeks between the birth and the first visit. The Midwives also pave the way for the visits of the Health Visitors as soon as their own have ceased, so that these are expected and often welcomed as they would not otherwise be. This willing co-operation of the Midwives is most warmly appreciated, as it must be the means of saving many babies from mismanagement and neglect.

Of further direct assistance to the Health Visitors' efforts are the Mothers' Meetings held in many of the districts by members of the Ladies' Public Health Society. These ladies usually give weekly Health Lectures, often of a very practical nature, and they also take a friendly personal interest in the mothers who attend them. In this way relationships are maintained between the Ladies' Public Health Society and the Public Health Office, where the educational work of the meetings is highly valued.

A noteworthy feature of the year has been the establishment in Ancoats of a very successful Guild for Mothers, under the auspices of the Ladies' Public Health Society. The Guild seeks to lessen the infant death-rate by providing

dinners at small cost to pregnant and nursing mothers, by demonstrations in suitable cookery, clothing, and domestic economy, and by medical consultations for delicate babies up to the age of 12 months. The advice given at the Guild corresponds to, and amplifies that of the Health Visitors, to whose endeavours a great impetus is given by the support which they thus secure from an independent yet friendly institution working on sound lines for the preservation of infant life. The Health Visitors have, in their turn, been useful to the Guild in finding suitable recipients of its instructions and help. Encouraged by the success of the Ancoats Guild, a similar venture in the Collyhurst District has just been affiliated to the Mothers' Guild Committee, and it may be hoped that other branches will presently be opened in different parts of the town.

A table is submitted giving a detailed account of the Health Visitors' work for 1908. The figures for the first four months are given separately, as the method of reporting and tabulating their work was altered shortly after they were taken over by the Corporation. A comparison with the amount of work done in former years is impossible for the same reason, although it may be estimated that some 2,275 more house-to-house visits were paid during 1908 than during 1907, and that in the course of these about 87 more defects were referred to the Sanitary Department (944 as against 857). In 333 more cases (1,247 as against 914) personal help appears as having been given, chiefly in the form of milk or clothing, principally the gifts of members of the Ladies' Public Health Society. This figure may, however, perhaps be accounted for by the more accurate record during 1908 of what was being done.

In addition to this quite informal assistance, at least 84 cases of distress were referred to various philanthropic institutions by the Medical Officer of Health, and for a large proportion of these families some help was obtained.

This year has, of course, been exceptionally trying on account of the extent of unemployment, and the Health Visitors have been confronted with a terrible amount of suffering and distress, which they are usually unable to relieve, and which must modify their attitude to negligence.

Since the beginning of May about 892 recommends for the Boys and Girls' Summer Camps, Lord Mayor's Charity Forms, etc., were distributed by the Health Visitors.

There are definite records of 36,545 visits to infants during the year, but this figure greatly under-estimates the total number of visits, as it has been found almost impossible to record many of the informal short calls that have been made in addition to the ordinary monthly, fortnightly, or weekly visits which have been duly reported.

STATEMENT OF WORK DONE BY THE FEMALE HEALTH VISITORS DURING THE YEAR 1908. *

Districts		House-to-house inspection									Re-Inspections																						Infants Visited		Visits re Phthisis			Visits re Death Cards	Reports re Neglected Children	Reports re Cases Requiring Assistance	Help rendered chiefly by the Ladies Public Health Society				Recommends given or Cases investigated	Mothers Meetings by L.P.H.S.			Special Investigation re Diarrhœa
											Work done under direction of Health Visitors															Work done through Sanitary Deparment																				
												Limewashing									Overcrowding abated	Defects remedied	Cleansing other than Limewashing				Overcrowding abated	Defects remedied		Cleansing											Cleansing by								
		Number	Overcrowded	Disrepair	Dirty	Cellar dirty or in disrepair	Yards defective	Closets defective	Referred to Sanitary Dept. Houses with defects	Referred to Sanitary Dept. Others	Number	Bedrooms	Kitchens	Yards	Closets	Cellars	Coalplaces	Ceilings	Staircases			Rooms	Cellars	Yards	Closets		Partly	Wholly	Houses	Cellars	Yards	Closets	Primary	Subsequent	Monthly	Corporation	Tenants				Milk	Food	Clothing	Others		Number	Average Attendance	
Ancoats West	Jan. to April...	98	...	3	10	...	...	...	3	6	89	4	4	7	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	665		127	...	46	...	...	...	...	...	...	...	...	...	...
	May + ...	41	...	14	10	7	9	10	13	32	89	26	21	47	49	4	...	9	10	...	1	6	1	1	1	...	1	2	...	...	...	...	217	1922	120	51	115	46	4	30	24	54	53	13	49	3	?	1135
Ancoats North	,, ..	56	...	3	7	...	...	...	8		23	9	13	14	14	...	4	18	3	...	...	...	...	...	...	...	...	...	...	...	...	870		150	...	56	...	...	...	...	...	...	...	...	...	...
	,, ..	82	...	...	10	2	3	2	5	10	96	44	35	68	69	18	13	17	7	...	...	1	1	...	...	1	2	7	...	...	...	290	1890	95	24	143	61	3	3	9	2	40	...	122	21	27	...
Ancoats Central	,, ,,	248	1	30	26	...	...	...	4	1	208	2	12	18	14	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	529		76	...	...	2	...	...	...	...	...	...	...	...	...
	,, ,,	69	...	61	20	19	41	24	19	21	185	1	15	51	47	2	5	6	10	4	25	9	...	7	4	...	2	9	3	1	...	...	196	1403	104	18	128	32	2	15	10	8	15	...	22	?	?	577
Ancoats South	,, ..	221	5	19	76	...	...	...	2	9	43	15	26	42	43	10	6	12	6	...	...	...	...	...	...	...	...	...	...	...	...	751		92	...	36	10	..	...	...	...	...	...	...	...	...
	,, ..	161	2	27	63	5	21	50	42	21	330	56	116	201	201	67	14	54	25	1	17	81	...	2	1	2	...	24	...	...	...	...	277	1371	121	20	106	45	9	3	129	37	54	6	81	22	109	372
Ancoats East	,, ..	260	1	8	44	...	...	...	2	8	99	12	10	14	14	...	3	12	4	...	...	...	...	...	...	...	...	...	...	...	...	568		65	...	29	3	...	...	...	...	...	...	...	...	...
	,, ,,	117	...	24	31	1	7	12	17	20	228	30	40	91	90	1	19	26	16	...	26	55	...	4	6	...	...	21	...	...	...	...	192	1367	72	19	61	38	7	3	48	60	42	31	103	22	58	386
London Road	,, ..	171	...	33	43	...	...	...	2	7	123	44	25	52	59	6	5	7	9	...	...	...	...	...	...	...	...	...	...	...	...	558		121	...	54	...	...	...	...	...	...	...	...	...	...
	,, ,,	274	3	64	113	68	96	48	37	34	462	108	75	232	234	31	33	51	39	...	41	70	8	...	1	...	1	8	...	1	...	...	204	1793	91	7	93	62	1	2	9	2	11	5	79	20	13	...
Deansgate...	,, ,,	246	5	21	100	...	...	...	3	0	235	23	36	62	68	14	6	14	26	...	...	...	...	...	...	...	...	...	...	...	...	580		128	...	48	1	..	...	...	...	...	...	...	...	...
	,, ,,	184	2	46	96	17	18	31	27	25	356	44	45	98	112	18	17	49	47	...	55	109	11	18	10	...	...	23	...	3	...	1	117	1500	102	29	152	44	...	1	14	18	75	2	82	22	31	...
St. George's North	,, ,,	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	910		164	...	68	...	...	...	...	...	...	...	...	...	...
	,, ,,	13	...	1	4	...	...	8	7	8	37	12	13	33	33	2	...	6	5	...	...	...	...	...	...	...	...	...	...	...	...	...	234	1502	152	53	115	87	4	...	58	14	8	1	25	19	22	...
St. George's East	.. ,,	140	...	8	6	...	...	...	4		74	4	5	8	9	8	...	2	1	...	...	...	...	...	...	...	...	...	...	...	...	987		194	...	65	..	...	...	...	...	...	...	...	...	...
	.. ,,	69	...	4	6	1	17	10	1	7	107	16	38	72	72	10	...	4	...	...	23	9	...	...	...	...	...	...	...	...	...	...	266	2263	188	69	216	97	2	1	29	15	14	3	47	19	20	...
St. George's Central	,, ,,	360	9	105	91	...	...	...	4	0	207	48	16	10	11	1	2	5	18	...	...	...	...	...	...	...	...	...	...	...	...	339		94	...	24	2	...	...	...	...	...	...	...	...	...
	,, ,,	324	4	117	92	2	78	136	34	20	395	48	29	92	94	2	2	11	22	...	56	32	5	8	11	...	...	13	...	...	...	...	117	507	66	11	61	15	...	...	6	1	5	2	56	19	15	...
C.-on-M. North	,, ,,	215	...	5	24	...	...	...	1	5	62	12	17	33	34	6	...	14	4	...	...	...	...	...	...	...	...	...	...	...	...	651		181	...	51	...	...	...	...	...	...	...	...	...	...
	,, ,,	130	3	10	40	3	13	19	15	18	296	57	53	145	150	25	18	24	29	...	51	17	4	1	1	...	1	7	...	...	...	...	194	2028	202	49	149	66	...	2	37	11	15	1	43	23	53	...
C.-on-M. South	,, ,,	269	1	37	9	...	...	...	3	7	164	6	10	51	40	7	3	11	1	...	...	...	...	...	...	...	...	...	...	...	...	1044		88	...	53	6	...	...	...	...	...	...	...	...	...
	,, ,,	199	1	41	4	48	41	21	73	22	468	19	56	139	128	25	11	44	3	...	87	17	17	1	6	1	4	26	...	...	1	1	290	2135	58	56	18	56	8	17	4	50	15	42	30	...	...	...
Hulme Central	,, ,,	154	2	34	41	...	...	...	2	3	54	3	7	16	16	2	...	3	2	...	...	...	...	...	...	...	...	...	...	...	...	1034		167	...	48	6	...	...	...	...	...	...	...	...	...
	,, ,,	97	1	22	39	13	16	13	21	45	229	14	20	46	46	17	1	15	1	...	18	37	3	6	18	...	7	10	...	...	...	...	270	1647	77	9	127	73	2	4	13	13	11	2	140	1	27	493
Hulme East	,, ,,	29	...	6	2	...	...	...	2		27	...	...	11	11	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	744		108	...	25	...	...	...	...	...	...	...	...	...	...
	,, ,,	156	1	60	49	36	19	23	14	16	136	...	3	38	38	3	1	2	1	...	25	28	3	...	...	...	1	8	...	...	...	...	262	1861	116	31	95	53	3	3	13	...	7	...	13	...	...	724
Total.....	Jan. to April...	2467	24	312	479	...	...	...	32	0	1408	182	181	338	326	56	31	98	74	...	...	...	...	...	...	...	...	...	...	...	...	10230		1755	...	603	30	...	...	86	...	...	...	...	...	...
	May + ...	1916	17	491	577	222	379	407	325	299	3414	475	559	1353	1363	225	134	318	215	5	425	471	53	48	59	4	19	158	3	5	1	2	3126	23189	1564	446	1581	775	45	84	403	285	365	108	892	200	...	3987

*At the end of April an alteration was made in tabulation, the work of the first four months is therefore given separately.

The Health Visitors have paid 5,346 visits in connection with notified cases of Phthisis, either as monthly visits of inquiry to ascertain whether the house is clean and whether the patient carries out the personal instructions designed to check the spread of the disease, or as quarterly visits to supervise a thorough cleansing of those parts of the house occupied by the patient, as well as the cleansing of his personal clothing and bedding. At the end of 1908 the Health Visitors had 533 cases of consumption under observation in their respective districts.

The house-to-house inspections amounted to 9,205, of which 4,822 were re-inspections of houses reported as defective or dirty at the time of the first visit.

Great importance attaches to the lime-washing done, no fewer than 5,928 rooms, yards, sculleries, etc., having been cleansed in this way, the Visitors lending out the brushes and giving the necessary dry lime.

Shortly after the other Visitors were taken over by the Corporation, it was arranged with the Jewish Ladies' Visiting Association that their two Jewish Health Visitors should attend at the Office for an hour every week to discuss their reports, so that their work also might to some extent come under the additional supervision now exercised by the Public Health Department. A separate statement of their work has been made out.

The work of the Health Visitor is designed to cover a large field left untouched by the Sanitary Inspector, or any other agency, and one which is essential to the permanent improvement of the health of the community, in connection with domestic conditions of cleanliness, wise feeding, cooking and clothing, the intelligent rearing of children, and general household management and method. But she has no right of entry to any house, and must, therefore, be the more careful to win the confidence of those whom she visits by patience, energy, sympathy, and cheerfulness, as well as by the intelligent and reasoned advice which she has to offer. The Health Visitor is particularly enjoined to exercise great tact in her relations with medical practitioners, midwives, or any public persons or officials with whom she may come in contact through her work, and to assist doctors and midwives when necessary in getting their instructions intelligently carried out by their patients. She frequently persuades the people to call in medical assistance when she foresees that by neglecting to do so they will bring upon themselves unnecessary trouble and suffering, but on no account may she offer any independent advice or express any criticism whatever where a doctor or midwife is in attendance.

A summary of the work done by the Health Visitors under the supervision of the Ladies' Society for Visiting the Jewish Poor and of the Medical Officer of Health is given in the following table:—

Work of the Jewish Health Visitors, year ending 31st December, 1908.

DISTRICT	Houses Visited		Condition of Houses							No. of Houses containing Lodgers	Complaints requiring action by Sanitary Department	Sickness			
	First Visit	Not First	Dilapidated	Not Dilapidated	Clean	Dirty	Improved since last Visit	Not Improved	Overcrowded			Infectious	Non-Infectious	Total Sickness	
Red Bank	503	1184	452	1235	1545	142	111	1073	...	688	207	11	335	346	481
Strangeways	103	675	61	717	758	20	99	576	...	312	94	2	55	57	756
Total	606	1859	513	1952	2303	162	210	1649	...	1000	301	13	390	403	1237

DISTRICT	Disinfecting Powder left at Houses	Limewashing							Reports as to Children being Neglected (clothing, food, &c.)	Help Rendered Help rendered includes :—Giving food, clothing, &c., advising mothers as to care and treatment of children, making of sick beds, cleaning houses for sick persons, obtaining recommends for Convalescents, &c.	Infants Visited	Visits re Phthisis	Re-inspection of Houses
		Living and Bed Rooms	Kitchens	Yards	Closets	Cellars	Coal-places	Ceilings	Staircases					
Red Bank	938	8	13	85	58	10	...	5	...	...	4	1120	113	936
Strangeways	728	3	8	50	13	14	...	8	...	...	48	682	160	122
Total	1666	11	21	135	71	24	...	13	..	...	52	1802	273	1058

MONSALL HOSPITAL.

MEDICAL SUPERINTENDENT'S ANNUAL REPORT FOR 1908.

By Dr. A. Knyvett Gordon, Medical Superintendent.

General Observations.

The total number of patients admitted during 1908 is greater than last year by 422, while the net mortality is practically the same.

The number of patients admitted in a moribund condition, and who died, in act, within 48 hours of admission, is larger, and these now form nearly one-quarter of the total deaths.

Except in the case of a patient suffering from laryngeal obstruction, where an operation may save life even if the child is in extremis, the notification for removal to hospital of a moribund patient is, in my opinion quite,

unjustifiable; it is of no value to the public health, and is harmful to the patient and to the hospital. Yet the number of these cases sent to Monsall has latterly increased.

Of the moribund cases, 9—or nearly one-fifth—were not suffering from any notifiable disease, while 19, or 40 per cent., were cases of Diphtheritic laryngitis with obstruction.

During the autumn and winter months there was considerable pressure on the accommodation for Scarlet Fever and Enteric Fever. There was, however, no overcrowding of the wards.

The health of the staff has been excellent, and the proportion of infectious disease contracted in hospital small. Six nurses and one maid had Scarlet Fever; one nurse and one maid Diphtheria; and three nurses Enteric Fever. In no case was the attack severe, and all the patients were able to resume work in the usual time.

I regret to say that the hospital suffered a severe loss in the death of Dr. T. R. Smith from Pneumonia and Influenza, which occurred in December. His professional ability was conspicuous, and the gentle courtesy of his manner had endeared him to patients and staff alike.

During 1908, 606 applications were received for the post of probationer nurse. As the majority of these came from candidates who were obviously unsuitable, forms detailing the duties and conditions of service were sent to 286 only, and ultimately 69 were accepted; 26 nurses left at the conclusion of their two years' service to undergo further training in a general hospital; 27 probationers left at or before the end of their three months' trial.

A new ward has been added to the hospital buildings, and was occupied towards the end of December. It was built by the City Architect, and contains 36 cots, which are being used at present for cases of Scarlet Fever, more especially those of the septic type. The floors are of "Terrazo" throughout, which has been laid in sections to avoid cracking, and there can be no doubt that it is better in every way than the usual wooden floor, inasmuch as it is more easily cleaned, and does not require to be waxed or polished. It is, moreover, quite as comfortable to the patients and nurses.

The ward is heated entirely by hot water circulating in radiators, each of which is in connection with an inlet for air which enters through a canvas filter. The foul air is extracted by upcast shafts heated by small stoves in the centre of each wing.

PUERPERAL FEVER.

The total number of cases admitted during 1908 is the largest yet recorded, viz., 69, and the death-rate has diminished to 20·3 per cent.

Inasmuch as the admission of cases of Puerperal Septic disease and their treatment on surgical lines is now well established, it seems hardly necessary to give the particulars of each case as has formerly been the custom. I append, however, a few notes on the series taken as a whole, together with an analysis of the fatal cases and of those in which, in addition to the customary disinfection of the uterus, it was thought advisable to open the abdominal cavity. No mention will be made of details which bear only on etiology, as these can be studied more profitably in the records of all cases occurring in the City, and not of those only which were admitted to Monsall.

Of the 69 cases admitted, 61 (88 per cent.) were treated on admission by disinfection of the uterus. For this purpose the whole surface was first curetted with a sharp instrument, followed by rubbing with swabs wrung out of undiluted Izal fluid, the uterus and vagina being subsequently packed with gauze soaked in a weaker solution of the same germicide. Neither intrauterine nor vaginal douching has been employed at Monsall in the acute stage of any case for $2\frac{1}{2}$ years. Of the 8 cases which were not treated in this manner, one was moribund on admission, and the patient died a few hours later; one had been curetted before admission; in three others the uterus had contracted well, and the procedure was not thought to be necessary. In the remaining four instances, the patients were not admitted until the acute stage had passed, though they were suffering somewhat severely from later complications of the disease.

As regards the bacteriology of the cases, a detailed examination was made in 61 instances. Of these, the infecting organism was found to be a streptococcus alone in 51. In three, bacillus coli communis was present alone, and in two more in conjunction with a streptococcus, and in one with B. proteus. The pneumococcus was found alone in one case, and staphylococci of one kind or another in three more. All these organisms were found in cultures taken from the interior of the uterus on admission.

On the assumption that the incubation period of Puerperal Sepsis, except in rare instances, does not exceed 48 hours, infection took place at the time of delivery, or immediately after, in 27 cases out of the 67 in which an accurate history was obtained, and in the remainder during the puerperium. Though a medical man was present at the confinement in the majority of these 40 cases, he would not, as a rule, have occasion to make an internal examination

at visits paid subsequent to the confinement, so he cannot very well he held directly responsible for the infection of the patient. It is important to bear this point in mind, as it is within my experience that the medical attendant has often either received or assumed blame for these later infections.

The average time elapsing between the onset of the septic symptoms and the admission of the patient to hospital was 5·44 days, which is one day longer than in the 1907 cases. It is much to be regretted from the clinical point of view that this interval is so long, as there can be no doubt that the success or otherwise of the surgical treatment and of the skilled nursing which are obtainable in hospital depends to a great extent on the time at which they become available. The great majority of our patients have not been adequately nursed before their admission, and many have shown signs of great neglect in the shape of bed-sores and ulceration of the mouth.

In seven cases, the infection followed severe laceration of the uterus or vagina from the use of forceps at the time of delivery. In one case, on the other hand, the laceration appeared to be due to the omission to accelerate delivery by their employment.

The cause of death in the 14 fatal cases was of follows :—

In one, Pneumonia ; here there was a history of chronic bronchitis previous to confinement.

In one, Pulmonary Tuberculosis, of old standing, which became much worse after confinement.

In six, General Peritonitis, in five of which the condition was present on admission.

In one, severe lacerations following the use of forceps.

In one, intense inflammation of the uterus, for which hysterectomy was unsuccessfully performed.

In one, Pelvic Peritonitis.

In one, Generalised Septicæmia.

Two more patients were moribund from Generalised Septicæmia on admission, and died a few hours later.

In addition to the operative treatment required for disinfection of the uterus as previously mentioned, the abdominal cavity was opened in the following 14 cases :—

Generalised Suppurative Peritonitis was present alone in eight cases. In one of these, the general condition did not admit of anything further than simple drainage of the peritoneal cavity through the abdominal incision ; this patient

died 48 hours later. In three more instances, drainage was established also through an incision through the posterior vaginal fornix; in two of these, multiple abscesses of the uterus were present, but the patients' condition did not permit of hysterectomy being performed also. All of these died.

In four more cases, pyosalpinx was present in addition to General Peritonitis, and the diseased tubes were removed, drainage being established also through the vagina. In one of these patients, who recovered, there was also a small suppurating ovarian cyst, which was removed with the appendages.

In the next group, Pelvic Peritonitis of a severe type was present, but the upper part of the peritoneal cavity was not affected. One of these patients was in extremis, and was treated by vaginal incision and drainage only. She did not recover.

In two more, abscesses of the uterine wall were present, and the patients were treated by combined vaginal and abdominal drainage with packing off of the uterine area from below with large quantities of antiseptic gauze; these recovered. One other patient was treated by abdominal drainage with simple ligature of one Fallopian tube; she recovered.

In the next group, the uterus was removed on account of its intensely septic condition, in each case abdominally; one patient recovered and one died.

These operations were of necessity performed in the acute stage of the illness, and at a time, therefore, when the inflamed condition of the parts rendered the procedures more than usually difficult. The resistance of the patients was also lowered in each case by pyrexia of some days' duration. I wish to make it clear that, whenever possible, abdominal operations were avoided in the acute stage of Puerperal Sepsis, and that they were only undertaken when the condition of the pelvic organs constituted an obvious and immediate risk to life. Almost every patient suffered from pelvic inflammation of some degree during residence, but the great majority recovered without operative treatment other than that required for the disinfection of the uterus.

The duration of the average stay in hospital of the patients who recovered was 42 days. Whenever possible, rest in bed was enforced for at least three weeks, but in some instances the patients were discharged at their own request on account of their anxiety about the condition of their home or children. In the treatment of Puerperal Sepsis this factor unfortunately gives rise to considerable difficulty. I am convinced that a prolonged stay in hospital is essential if the recovery is to be permanent, for otherwise the patients after an interval are apt to become chronic invalids; but it frequently happens that when the wife is in hospital the children are neglected, and many women have felt bound to return to their home before their cure was really complete; moreover, the great majority of our patients cannot afford to rest in their own homes after discharge from hospital.

The Treatment of Patients requiring Exceptional Isolation.

In most Fever Hospitals difficulties arise from time to time in attempting to provide for the treatment of certain patients whom, for some reason or other, it is not advisable to admit direct to the ordinary wards. The system which is in use at Monsall has been evolved gradually during the last six years, but I have not hitherto felt that the details were sufficiently settled for inclusion in an annual report. However, as the details as finally arranged have worked smoothly for nearly a year, and it seems probable that no further modification of any moment will be required, I will first mention the difficulties in administration which occur in practice, and then describe the method which has been adopted to meet them.

Broadly speaking, there are three classes of cases which it is not advisable to treat in the ordinary wards, namely, those who on their admission have no definite signs of the certified complaint; those who are suffering from the disease in a very intense form; and those who either have another infectious disorder as well, or—what is for this purpose practically the same thing—have been exposed to such additional infection before admission.

In the first class the patients have to be protected from others, and in the second and third classes others must be protected from them.

The problem might be solved, and is solved in some hospitals, by admitting all three classes to small isolation wards, but this is impracticable at Monsall, for we have only 32 "isolation" beds (in eight four-bedded wards) for our 430 patients, and the number of these "special" cases is very much greater than this. Even in hospitals which have many small wards, this solution is not always the best, for the nursing in a small ward is of necessity inferior to that obtainable in a larger building, where the presence of many acute cases necessitates the employment of an experienced ward sister. Moreover, in isolation wards a much larger staff of nurses is required in proportion to the number of patients, and those in the small wards have often very little to do. two nurses being required in the 24 hours in some cases for one patient only,

Moreover, it is now abundantly clear that structural separation of the cases is not the most important point, infection being carried—as it is—mainly by hands, clothing, and utensils (including toys), and not to any great extent by the air of the ward. Consequently, it does not, in practice, suffice to place patients in separate small wards, so long as they are attended by the same nurse, who takes no special precautions, and relies on the separation afforded by the walls or partitions. If the patients in different small wards are treated by the same nurses, they might just as well be in one common ward, except for the sake of appearance. Moreover, at Monsall it has been apparent that these special cases in classes 1 and 2 can be treated with safety to themselves and to others in the general wards without any such structural separation.

The patients in class 3 are, I think, in a different category, as there are some "co-existent" infectious diseases, notably Measles and Chicken-pox, which are so infectious that it seems well to take precautions as regards the air also. But the great bulk of special cases fall in classes 1 and 2, so that the isolation wards are sufficient for the treatment of those in class 3, except in times of pressure.

The method finally adopted at Monsall is as follows:—The patient's bed in the general ward is surrounded with a screen covered with sheets, which are kept constantly wet with a weak solution of some disinfectant. The main purpose of this screen is to serve as a label, and to remind the nurses that certain precautions must be taken for the patient behind it. At the same time, I think the wet sheets may possibly arrest infective particles that are projected against them in the acts of coughing or sneezing. The only other requisites are two glass shelves fixed on the wall behind the bed, and a locker or portable cupboard made of metal, with an enamelled surface, which can be easily disinfected and kept clean.

The precautions to be taken by the nurses in attending patients behind this screen or "barrier" are printed on a card fixed to the screen, and are as follows:—

Precautions to be Observed in the Nursing of Barricred Cases.

(1) Rubber gloves are to be worn by the Nurse for all manipulations connected with the case, including the handling of clothes. The gloves are to stand in a bowl of 1 in 400 Izal solution.

(2) The following utensils are to be marked and kept on the glass shelves or in the locker provided:—

Spatula
Nozzles
Clinical Thermometer
} To be kept completely immersed in 1 in 400 Izal solution.

At least two bowls.

All feeding utensils (plates, spoons, forks, etc.).

(3) A plentiful supply of wet swabs, with a bowl containing Izal solution to receive these when used, is to be kept on the locker. Handkerchiefs or muslin squares are not to be employed.

4. No toys or books that have once been used inside the barrier are to be taken outside it except to be destroyed.

5. In every case a square of jaconette is to be placed on the pillow-slip, and over this a piece of muslin; the latter is to be renewed whenever soiled.

(6) An overall is to be worn by the Nurse whenever either the patient or the clothes are handled. This is to be kept inside the barrier.

A. Knyvett Gordon,

August, 1908. *Medical Superintendent.*

This "barrier" system is employed mainly in the Scarlet Fever wards, though occasionally it is useful for treating a case of Diphtheria or Enteric Fever that has some septic complication or that has been exposed to the infection of some other disease, an isolation ward not being at the time available.

In practice, all cases of septic Scarlet Fever and those suffering from nasal discharge are "barriered" on admission, and until the septic symptoms have disappeared, and there can be no doubt that this procedure has been advantageous to the other patients in the ward. Similarly, the "barrier" is often useful for patients who have the disease in such a mild form as to render the diagnosis difficult. It is certainly desirable that these shall be protected from the other patients in the general ward.

In times of pressure, the system has been valuable on account of its elasticity. As many as four "barriers" can be erected in a large ward without taxing the nursing staff unduly, and the break in the continuity of the medical and nursing treatment which occurs when a patient is transferred to an isolation ward is avoided, as is also the risk of any exposure to cold during transit.

In practice, the "barrier" has been used not only for the treatment of cases of septic Scarlet Fever and of those suffering from an unusually mild attack, but also, during times of pressure, as a substitute for the isolation ward. Thus patients suffering from co-existent Scarlet Fever and Diphtheria, Scarlet Fever and Measles, Chicken-pox and Whooping Cough, have been treated in this way during the last year, and, except in one instance—where a delay of half-a-day took place before the "barrier" was erected (owing to the misinterpretation of an order by the nurse)—infection of others in the ward did not occur, neither did any patient so "barriered" contract any fresh complaint. The isolation wards are, however, preferable for these.

One disadvantage of the "barrier" is obvious—viz., that it may hide the patient somewhat from the view of the nurses. Except in the case of delirious children, this is counterbalanced by the fact that the patient is more inclined to sleep when he does not see the others in the ward, and delirious children can be restrained by the use of a net covering the cot about 18 inches above the patient's head.

Though the screens have now been in use for some six years, no untoward event has occurred, and there can be no doubt that patients so treated are more easy, and not more difficult to nurse. In one of the wards there is an "L"-shaped fixed screen of glass about eight feet high, which is used instead of the "barrier": this was erected for experimental purposes, and in practice has not been found satisfactory, in that the patient enclosed by it is often somewhat frightened. Moreover, the cleaning of the glass each day takes 40 minutes, while the sheets on the movable screens can be renewed at once if they become soiled.

SCARLET FEVER.

The number of cases of Scarlet Fever admitted during 1908 is greater than in 1907 by 14 per cent., and the mortality is lower by 0·7 per cent.—a somewhat considerable reduction, especially as there were no fewer than 15 patients, or 22 per cent. of the total scarlatinal deaths, admitted in a moribund condition and dying within 48 hours of admission. If these are deducted—and they should rightly not be debited to the Hospital—the scarlatinal mortality becomes 2·9 per cent.

The factor that has first to be considered in estimating the significance of a scarlatinal mortality in a hospital is the number of septic cases admitted during the year. This cannot be recorded statistically, as we have no mathematical definition of what constitutes a septic case. Inasmuch as these are now all "barriered" they are easily noticeable in the ward, and I am certainly under the impression that we have had during 1908 quite as many septic cases as in previous years.

On examining the incidence of the various complications for 1907 and for 1908, we find in the case of otorrhœa a very marked reduction (from 20·4 per cent. to 9·9 per cent.) and a similar diminution in the case of nephritis and of adenitis (of convalescence), while the incidence of rhinorrhœa remains unaltered.

There can be no doubt, in my opinion, that the marked reduction both in the mortality and in the incidence of such complications as these which depend on septic infection, is due to the resumption during 1908 (which had been intermitted during 1907) of the practice of freely irrigating with tap water both the nose and throat of all scarlatinal patients. In the Report for last year I showed that the incidence of septic complications had not been diminished by omitting the douche in the milder cases, and the proof of the value of the douche is now complete. In former years it had been apparent that it was not advisable to use any disinfectant solution, however mild, for irrigation of the throat and nose.

The incidence of post scarlatinal Diphtheria remains at a figure which is practically negligible—viz., ·1 per cent. There were no deaths from this complication. I may point out that post scarlatinal Diphtheria has been practically banished from Monsall for six years, the reason being, as I believe, that rubber gloves are used by the nurses in the treatment of the throat and nose. Inasmuch as bacteriological investigations of all cases in the scarlatinal wards are repeatedly made as a matter of routine, it is fair to assume that cases of diphtheric infection have not escaped notice.

The subject of the treatment of the otitis of scarlatinal origin was treated fully in the report for last year. No change of note has occurred in the management of these cases, except that prolonged packing of the wound after the radical operation has been discontinued, such cases being now treated after the first week or ten days by the instillation of alcoholic solutions instead.

For the cure of otorrhœa only, I have performed the radical mastoid operation in 48 instances during 1908. There have been no deaths, and improvement in hearing has resulted in every case; in some this has been very well marked.

Operations for the removal of carious bone on the mastoid side only have not been resorted to at all during 1908 for the treatment of otorrhœa; they have been reserved for cases of mastoid abscess with external local signs where the otorrhœa was of short duration only.

In no case was the radical operation performed until intratympanic medication had been found to be insufficient. In the average case, the otorrhœa had thus persisted for six weeks.

DIPHTHERIA.

The total number of cases admitted was slightly larger than last year, and the mortality is very high, viz., 19·5 per cent. This is due to only one cause, namely, that the great majority of the cases sent to Monsall are admitted at a time when the administration of antitoxic serum is practically useless. This state of things will probably continue until it becomes the custom to administer antitoxin not only to those who certainly have, but to those who may have Diphtheria. In Manchester antitoxic serum is distributed free of charge to any medical man who applies for it.

It will be seen on reference to the second table that one-half of the cases were sent to Monsall directly they were seen by the certifying physician. In that case there is, of course, no reason why he should give antitoxin, but in the remainder it would certainly have been better for his patient if he had done so. In practice, only about 5 per cent. of all our cases receive antitoxin before admission. It is, for various reasons, probable that the remedy is of very little use after the third day, and the second column of this table shows that 65 per cent. of the Monsall cases were admitted after this period had elapsed.

At Monsall only 38 beds have been available for cases of Diphtheria, and during the latter months of the year only those suffering from laryngeal obstruction or intense toxæmia were admitted. Thus 102 patients required tracheotomy, which was performed immediately after admission in 95 instances.

The death-rate of these cases (24·5 per cent.) is the lowest yet recorded in this Hospital, and this figure is reduced to 12·7 per cent. if those admitted in a moribund state are excluded.

In about four-fifths of those suffering from respiratory obstruction, the larynx had become implicated by extension of the disease from the fauces, an event which can be almost entirely prevented by the prompt administration of an adequate dose of antitoxic serum.

The incidence of the various forms of paralysis is exceptionally low, but it may perhaps be accounted for by the fact that so many patients died, and did not, therefore, reach the stage of the disease at which paralysis is wont to supervene.

OTHER DISEASES.

In 183 instances the original diagnosis was not confirmed. The percentage of error was, in the case of Scarlet Fever 6 per cent., of Diphtheria 15 per cent., and of Enteric Fever 8 per cent. In addition, there were admitted for special reasons three cases of Anthrax and one of Varicella.

Because the original diagnosis was not correct it does not follow that the patient should not have been sent to hospital, except in the case of those—nine in number—who were in a dying condition. In the great majority of the others an accurate diagnosis was only possible after prolonged observation, and in the case of Diphtheria, repeated bacteriological examination also.

Where the patient is described as not suffering from any obvious disease on admission, it is necessary to point out that sufficient time was allowed to elapse before his discharge for any later signs of the certified illness to show themselves ; as a rule, these patients were detained for a minimum period of three weeks.

ENTERIC FEVER.

The death-rate of this disease is somewhat higher, which is accounted for by the fact that a greater number of patients were admitted in a late stage of the disease, no fewer than 130 being thus received after the tenth day of the illness.

No change has occurred in the routine treatment of the patients except that the method of administering Izal oil described in detail in last year's Report was not adopted in so great a proportion of the cases. This diminution was due, not to any unfavourable experience of the drug, but to the fact that the pressure on the nursing staff by reason of the high proportion of delirious patients made the additional work which the frequent administration of the Izal entailed impossible.

Return Cases.

As in previous years, a list has been sent me by the Medical Officer of Health of all cases of Scarlet Fever in which infection, either directly or indirectly, from a patient previously discharged from Monsall Hospital was possible. It does not follow, and it is not alleged, that in any given case, this was undoubtedly the source of infection.

Consequently, comparison cannot be made between these figures and those given for areas where it is the custom to hold an inquest on each occurrence and decide whether it is to be classed as a return case or not. Where this latter system is adopted it is customary to fix a time limit for the interval elapsing between the discharge of the originating case and the onset of the illness in the infected patient. In some cities this is a fortnight, and in others one month.

The holding of such an inquest is, however, of very doubtful utility, as in any given case it is impossible to eliminate other sources of infection. Scarlet Fever is a widespread disease, and the opportunities for its dissemination are both numerous and indefinite.

In our own series, for instance, it frequently happens that there is also a history of other cases—often numerous—in the same school, and the degree of contact between the originating and the infected patient is often not very intimate. Three of the alleged originating cases this year had no sign of Scarlet Fever whatever, and four of the alleged return cases were infected in under 48 hours from the discharge of the originating case—a remarkably short incubation period for Scarlet Fever.

In the Manchester series, if a time limit of a fortnight were adopted, the incidence of return cases would be 4·8 per cent. Only 13 cases arose after a month, however.

Turning now to the cases themselves, it will be seen :

1. That the great bulk of the patients alleged to have infected others were detained in hospital for a period of five to eight weeks, that is to say, for the most commonly accepted time.

2. That 89 per cent. of these patients showed no discoverable abnormality when they left Monsall, but that 30 per cent. of these developed discharge from the nose or ears subsequently, but not, as a rule, immediately. The remainder, with an insignificant exception, continued in an apparently normal state. It does not appear, therefore, that there is any evidence pointing to the absence of care in the inspection of the patients before their discharge.

From previous reports of the Metropolitan Asylums Board, where a very large number of cases were examined, it is apparent that patients suffering from mucous discharges are apt to be infective, and that this infectivity is not decreased, but rather increased, by merely detaining them in hospital.

At Monsall, attempts have been made to eliminate the mucous discharge factor by appropriate treatment of the sufferers in hospital. It is here held that nasal discharge is most frequently caused by the presence of sloughing adenoid tissue in the naso-pharynx, and that otorrhœa similarly is often due to the presence of carious bone. Both these lesions are amenable to operative treatment, and are so treated. Consequently, patients do not, as a rule, leave Monsall with discharges from the nose or ears. Some, however, develop these conditions later, and apparently then become infective. It is difficult to see how this occurrence can be prevented, as we do not fully understand its cause. The most probable explanation lies in the change of environment that takes place when a patient of the poorer class leaves hospital. Previous to discharge he has been kept in artificially-heated wards, and has been well fed and clothed, and it is not surprising that he should "catch cold" when he leaves, and that a mucous discharge should subsequently develop.

When a bath was given immediately before discharge, the supervention, almost immediately, of catarrhal signs was not uncommon, and, for this reason, the abolition of this bathing was advocated by Simpson in his first report to the Metropolitan Asylums Board. But at Monsall the bathing takes place on the day before the discharge, and the patient spends the night in clean bedding in the convalescent ward. It is evident, however, from the length of the interval elapsing between discharge and infection of the second case, that in the great majority of instances infectivity is not determined by anything that takes place on, or immediately preceding, the day of discharge from hospital.

Whether the incidence of return cases could be diminished by treating all cases of Scarlet Fever entirely in the open air—as is done, for instance, at Nottingham—remains to be seen. It is impossible to compare the statistics of one town with another in this respect for the reasons I have mentioned, but one would expect that some sort of hardening process would result, so that a tendency to catarrh would be diminished.

At present, however, we do not know, and we cannot rightly pretend to tell, when any patient who has had Scarlet Fever is free from the risk of conveying infection to others. We cannot recognise the causal organism, and we know nothing of the nature of the reaction between it and the patient. In the case of Diphtheria, where we know something of both factors, return cases are practically non-existent.

MONSALL HOSPITAL LABORATORY.

REPORT FOR 1908.

In the Hospital Laboratory, which is now very well equipped, about 7,000 bacteriological examinations were made during 1908, the bulk of which were for the detection of Diphtheria bacilli. Swabs from every patient in the Scarlet Fever, Diphtheria, and isolation wards were taken for examination, and the patient was not allowed to leave the Hospital if any organisms resembling Diphtheria bacilli, morphologically, were found. All the necessary media were made on the premises.

In the case of Puerperal Fever, the examinations were not limited to the detection of the infecting organism, but, whenever possible, the behaviour of the streptococci with culture media prepared from various sugars and glucosides was investigated.

In addition, the blood of every patient suspected to be suffering from Enteric Fever was examined for its reaction to Widal's test.

Apart from purely bacteriological work, histological examinations of the blood from all cases of Puerperal Fever and from many of the patients suffering from Enteric Fever and from Scarlet Fever were also made.

MONSALL HOSPITAL.

Statistical Report for the Year 1908.

Remaining in Hospital January 1st, 1908	323
Patients admitted during 1908	2598
	2921
Cured and Died	2549
Remaining in Hospital December 31st, 1908	372
	2921
Total number of Deaths during 1908	192
Net Mortality	7·53%

Of the Deaths, 47 occurred within 48 hours of admission = 24·48%

Daily Averages.

Patients	295
Officers, Nurses, and Servants	167
Average stay of Patients (in days)	42·7

TABLE SHOWING MONTHLY DISTRIBUTION OF DISEASES THROUGHOUT THE YEAR.

Discharges and Deaths.

1908	Scarlatina	Diphtheria	Enteric Fever	Erysipelas	Puerperal Fever	Other Diseases	Total
January	182	28	30	6	7	11	264
February	120	17	23	9	6	14	189
March	116	21	19	4	7	14	181
April	107	21	12	4	3	18	165
May	157	26	19	8	5	18	233
June	131	21	16	6	7	23	204
July	172	16	12	3	3	18	224
August	150	13	9	7	12	10	201
September	178	22	4	3	12	11	230
October	123	19	3	3	2	14	164
November	150	15	12	5	2	6	190
December	177	48	31	12	3	33	304
Total	*1763	267	190	70	69	190	2549

* Of these, 2 suffered from Scarlatina and Tuberculosis co-existent; 2 from Scarlatina and Measles co-existent; 3 from Scarlatina and Varicella co-existent; 5 from Scarlatina and Pertussis co-existent; 10 from Scarlatina and Diphtheria co-existent.

TABLE SHOWING NUMBERS OF VARIOUS DISEASES TREATED.

Disease	Remaining in Hospital, Jan. 1st, 1908	Admitted during 1908	Discharges and Deaths during 1908	Remaining in Hospital, Dec. 31st, 1908
Scarlatina	251	1789	1763	277
Diphtheria	23	269	267	25
Enteric Fever	33	201	190	44
Erysipelas	5	68	70	3
Puerperal Fever	6	73	69	10
Other Diseases	5	198	190	13
Total	323	2598	2549	372

Case Mortality Per Cent.

Year.	Scarlatina.	Diphtheria	Enteric fever.	All diseases
1903	4·7	18·4	19·2	8·5
1904	3·3	16·3	14·1	6·5
1905	3·6	19·9	15·1	8·4
1906	4·5	19·3	18·1	8·2
1907	4·5	17·2	10·2	7·4
1908	3·8	19·5	16·8	7·5

Scarlatina.

Age of Patients	MALE			FEMALE			TOTAL		
	Cases	Died	Mortality per cent.	Cases	Died	Mortality per cent.	Cases	Died	Mortality per cent.
Under one year ...	10	3	30·0	3	0	...	13	3	23·1
1 to 2 years ...	25	3	12·0	17	6	35·3	42	9	21·4
2 to 3 ,, ...	48	7	14·6	44	5	11·1	92	12	13·0
3 to 4 ,, ...	80	4	5·0	77	6	7·8	157	10	6·4
4 to 5 ,, ...	66	2	3·0	84	2	2·4	150	4	2·7
5 to 10 ,, ...	352	14	4·0	404	8	2·0	756	22	2·9
10 to 15 ,, ...	198	2	1·0	159	2	1·3	357	4	1·1
15 to 20 ,, ...	56	0	...	43	1	2·3	99	1	1·0
20 to 25 ,, ...	24	0	...	23	0	...	47	0	...
25 to 30 ,, ...	11	0	...	10	0	...	21	0	...
Over 30 ,, ...	7	0	...	22	2	9·1	29	2	6·9
Total	877	35	4 0	886	32	3·6	1763	67	3·8

Of the deaths, six were complicated by other co-existent diseases; 15 deaths occurred within 48 hours of admission.

Percentage Complications in Scarlet Fever, 1908.

Complication	Number	Percentage
Otorrhœa	174	9·9
Rhinorrhœa of Convalescence..	49	2·8
Nephritis	48	2·7
Albuminuria	40	2·3
Endocarditis	31	1·8
Adenitis of Convalescence	17	0·9

Scarlatina—*continued*

Year	No. of Scarlatinal Discharges and Deaths	No. of Cases of Post Scarlatinal Diphtheria	Case Percentage	Died
1901	2669	104	3·9	3
1902	2018	29	1·4	1
1903	1877	8	0·4	2
1904	1560	7	0·4	0
1905	1499	13	0·9	0
1906	1897	10	0·5	1
1907	1548	1	0·1	0
1908	1763	2	0·1	0

Diphtheria.

Age of Patients	MALE			FEMALE			TOTAL		
	Cases	Died	Mortality per cent.	Cases	Died	Mortality per cent.	Cases	Died	Mortality per cent
Under 1 year ...	2	1	50·0	6	5	83·3	8	6	75·0
1 to 2 years ...	21	9	42·9	24	8	33·3	45	17	37·8
2 „ 3 „ ...	8	1	12·5	21	6	28·6	29	7	24·1
3 „ 4 „ ...	20	0	...	16	2	12·5	36	2	5·6
4 „ 5 „ ...	21	2	9·5	20	3	15·0	41	5	12·2
5 „ 10 „ ...	32	6	18·7	54	6	11·1	86	12	14·0
10 „ 15 „ ...	5	...	...	6	2	33·3	11	2	18·2
15 „ 20 „ ...	0	...	...	2	0	...	2	0	...
20 „ 25 „ ...	1	...	...	2	1	50·0	3	1	33·3
25 „ 30 „ ...	1	...	...	4	0	...	5	0	...
Over 30 „ ...	0	...	...	1	0	...	1	0	...
Total	111	19	17·1	156	33	21·2	267	52	19·5

19 deaths occurred within 48 hours of admission.

All patients with Diphtheria, and also all those suffering from Scarlet Fever, were examined for Diphtheria bacilli before being discharged from the Hospital.

Diphtheria.

Table showing interval elapsing between Date when the Patient was first seen by a Medical Man and the Date of Admission to Hospital, also showing Day of Disease on Admission.

Days	Interval between admission and date when first seen by Medical Attendant		Day of disease on admission	
	All Cases	Deaths.	All Cases	Deaths
Sent in on the same day	130	25	14	5
2nd day	47	12	43	6
3rd ,, ...	27	5	46	7
4th ,, ...	25	5	44	6
5th ,, ...	17	0	34	10
6th ,, ...	5	2	22	5
7th ,, ...	8	1	24	6
8th ,, ...	2	1	14	2
9th ,, ...	1	0	12	3
10th ,, ...	1	0	3	1
Over 10 days.....	4	1	11	1
Total	267	52	267	52

Complications in Diphtheria.

Complication	Number of Cases	Percentage
Otorrhœa	2	0·7
Rhinorrhœa	...	...
All forms of Paralysis	18	6·7
Cardiac Paralysis alone	7	2·6
Palate alone	10	3·7
Diaphragm alone	1	0·4
Laryngeal alone	...	...
Hæmorrhagic Diphtheria	...	...
Adenitis of Convalescence	...	...

Tracheotomy Cases.

Age of Patients	No. of Patients	Died	Mortality per cent.
Under 1 year	5	3	60·0
1 to 2 years	28	14	50·0
2 ,, 3 ,, ...	12	4	33·3
3 ,, 4 ,, ...	16	1	6·2
4 ,, 5 ,, ...	16	...	...
5 ,, 10 ,, ...	25	3	12·0
10 ,, 15 ,, ...	...	...	...
15 ,, 20 ,, ...	...	...	...
Total	102	25	24·5

Of these, 12 died within 48 hours of admission.

Enteric Fever.

Age of Patients	MALE			FEMALE			TOTAL		
	Cases	Died	Mortality per cent.	Cases	Died	Mortality per cent.	Cases	Died	Mortality per cent
Under one year ...	...	...	...	...	...	...	...	...	...
1 to 2 years ...	1	...	...	1	...	..	2	...	...
2 to 3 ,, ...	...	...	...	1	...	...	1	...	...
3 to 4 ,, ...	2	...	...	1	1	100·0	3	1	33·3
4 to 5 ,, ...	2	2	100·0	1	...	...	3	2	66·6
5 to 10 ,, ...	10	1	10·0	9	...	...	19	1	5·3
10 to 15 ,, ..	15	1	6·7	11	1	9·1	26	2	7·7
15 to 20 ,, ...	19	3	15·8	11	1	9·1	30	4	13·3
20 to 25 ,, ...	18	2	11·1	10	1	10·0	28	3	10·7
25 to 30 ,, ...	14	6	42·9	5	...	...	19	6	31·6
30 to 35 ,, ...	22	4	18·2	7	1	14·3	29	5	17·2
35 to 40 ,, ...	4	...	...	4	1	25·0	8	1	12·5
40 to 45 ,, ...	4	2	50·0	4	2	50·0	8	4	50·0
45 to 50 ,, ...	2	...	...	4	...	...	6	...	.
Over 50 ,, ...	7	2	28·6	1	1	100·0	8	3	37·5
Total.....	120	23	19·2	70	9	12·9	190	32	16·8

One death occurred within 48 hours of admission

Percentage of Complications in Enteric Fever.

Complication	Number of Cases.	Percentage	Complication	Number of Cases.	Percentage
Pneumonia	...	...	Intestinal Hæmorrhage	7	3·7
Relapse	6	3·2	Perforation	8	4·2

Enteric Fever.

Table showing Interval elapsing between Date when Patient was first seen by a Medical Man and the Date of Admission to Hospital, also showing Day of Disease on Admission.

Days	Interval between Admission and date when first seen by Medical Attendant		Day of Disease on Admission	
	All Cases	Deaths	All Cases	Deaths
Sent in on the same day	8	1	0	0
2nd Day	11	3	0	0
3rd ,, ...	10	1	1	0
4th ,, ...	17	6	1	0
5th ,, ...	11	2	4	0
6th ,, ...	17	3	7	1
7th ,, ...	16	2	9	2
8th ,, ...	15	4	10	2
9th ,, ...	17	4	14	3
10th ,, ...	12	2	14	3
Over 10 days	56	4	130	21
Total	190	32	190	32

Other Diseases.

Certified as	Actual Disease	No.	Certified as	Actual Disease	No.
Scarlatina.....	Tonsillitis	42	Enteric Fever..	Enteritis	5
,, ...	Erythema	22	,, ...	Pneumonia ...	4
,, ...	Nil	20	,, ...	Tuberculosis ...	3
,, ...	Measles	4	,, ...	Appendicitis ...	1
,, ...	Eczema	3	,, ...	Cerebellar Abscess	1
,, ...	Pertussis	3			
,, ...	Pneumonia ...	3	,, ...	Empyema	1
,, ...	Rötheln	3	,, ...	Phthisis	1
,, ...	Burns	2			
,, ...	Coryza	1	Erysipelas ...	Abscess of Scalp	1
,, ...	Dentition	1	,, ...	Nephritis	1
,, ...	Empyema	1	,, ...	Periostitis	1
,, ...	Endocarditis ...	1	,, ...	Pityriasis	1
,, ...	Impetigo	1	,, ...	SenileGangrene	1
,, ...	Meningitis	1	,, ...	Thrombosis ...	1
,, ...	Otorrhœa	1	,, ...	Urethral Abscess	1
,, ...	Rheumatism ...	1			
,, ...	Scald of Face...	1			
,, ...	Tuberculosis ...	1	Puerperal Fever ...	Choleystitis ...	1
,, ...	Vaccinia.....	1	,, ...	Pneumonia ...	1
,, ...	Varicella	1	,, ...	Post partum hœmorrhage.	1
Diphtheria ...	Tonsillitis	20			
,, ...	Measles	11	Anthrax	Anthrax... ...	3
,, ...	Laryngitis	3			
,, ...	Bronchitis	2	Measles	Burns.....	1
,, ...	Pneumonia ...	2			
,, ...	Laryngeal Abscess	1	Varicella	Varicella	1
,, ...	Marasmus	1	Sent in with Mother..... (Other than those sent in with Puerperal Fever cases)	.....	3
,, ...	Status Thymicus	1			
,, ...	Tonsillar Abscess	1			

Total of other Diseases, 190.

In the other diseases there were 22 deaths, nine of which occurred within 48 hours of admission. Total mortality of other diseases, 11·6 per cent.

Particulars of Return Cases of Scarlet Fever.

Number of alleged originating cases 116*

Ditto return cases 134

Percentage of alleged return cases on all cases of Scarlet Fever Discharged..... 7·9

* Of these 1 had Erythema; 1 Diphtheria; and 1 had no sign of disease.

Table A.

Showing duration of stay in Hospital of Originating Case.

Time	No. of Cases
Under 4 weeks	2
4 to 5 ,, ...	5
5 to 6 ,, ...	31
6 to 7 ,, ...	32
7 to 8 ,, ...	21
8 to 9 ,, ...	10
9 to 10 ,, ...	6
10 to 11 ,, ...	4
11 to 12 ,, ...	3
Over 12 ,, ...	2
Total	116

Table B.

Showing Condition of Originating Case both On and After Discharge.

Condition on Discharge.

Nothing abnormal	104
Otorrhœa	2
Rhinorrhœa	1
Peeling	9
	116

Condition after Discharge.

Nothing abnormal	79
Otorrhœa	6
Rhinorrhœa	21
Peeling.....	6
Otorrhœa and Rhinorrhœa co-existent	2
Peeling and Rhinorrhœa co-existent	2
	116

Table C.

Showing Interval Elapsing between Discharge of Original Case and Onset of Secondary Case.

Time	No. of Cases
Under 48 hours	4
2 to 3 days	6
3 to 4 „	3
4 to 5 „	8
5 to 6 „	13
6 to 7 „	9
7 to 14 „	39
14 to 21 „	24
21 to 28 „	15
28 to 35 „	5
Over 5 weeks	8
Total	134

BAGULEY SANATORIUM FOR INFECTIOUS DISEASES.

By Dr. T. Basil Rhodes, Medical Superintendent.

Annual Report—Year 1908.

During the year ending December 31st, 1908, 597 patients were under treatment in this Hospital; of these, 89 were remaining in hospital on January 1st, 1908, and 508 were admitted during the year. The following tables will show the distribution of these cases according to the disease from which each suffered and the district from which they came, and will give, in tabulated form, the result of the treatment that they received here. The report will follow the lines of my previous reports for the years 1904, 1905, 1906, and 1907, and will thus be useful for comparison with them, and for calculations in conjunction with them. The hospital has been kept very busy during the year, the total

number of cases admitted in the 12 months, namely, 508, being a record since the opening of the hospital. The average number of patients under treatment daily in the hospital has been 75; the average for 1907 was 67.

Fatality Percentage.

The *fatality percentage* on all cases whose treatment was concluded during 1908 was 3·34. The corresponding figure for 1907 was 1·09, which was exceptionally low. The percentage for 1908 is lower than that for any year except 1907.

The *percentage fatality* amongst cases of *Scarlet Fever* has been low for the last five years, namely, 3·2 per cent. for 1904, 3·88 per cent. for 1905, 2·39 per cent. for 1906, 0·7 per cent. for 1907, and for 1908 1·86 per cent.

The *percentage fatality* of cases of *Diphtheria* during 1908 was high, namely, 11·11 per cent, there being 8 deaths amongst 72 patients.

The following tables give a general review of the cases treated during 1908:—

List A.—*All cases—Present in Hospital on January 1st, 1908, and admitted, discharged, or died during 1908.*

District	Cases in Hospital on Jan. 1st, 1908	Admitted	Discharged	Died	Cases in Hospital on Jan. 1st, 1909	Total Cases treated	Death-rate per cent. on all Cases discharged
Withington	17	89	93	1	12	94	1·06
Levenshulme ...	5	40	31	4	10	35	11·42
Bucklow	22	129	110	6	35	116	5·17
Other Districts...	4	16	17	1	2	18	5·55
Private Cases ...	1	1	2	0	0	2	...
Manchester ..... (Including Moss Side)	40	233	238	5	30	243	2·05
Totals	89	508	491	17	89	508	3·34

Fatality percentage—1904—4·48.
,, ,, 1905—6·64.
,, ,, 1906—4·10.
,, ,, 1907—1·09.
,, ,, 1908—3·34.
} Average for 5 years—3·58 per cent.

LIST B.—*All cases admitted during 1908—Divided according to their diagnosis and the districts from which they came.*

DISTRICT	Scarlet Fever	Diphtheria	Other Diseases	Cases sent in as one disease found on admission to be suffering from another	Cases found on admission to be suffering from two or more diseases—mixed infections	Totals
Withington	53	34	0	2	0	89
Levenshulme	31	9	0	0	0	40
Bucklow	103	25	0	0	1	129
Other Districts	15	1	0	0	0	16
Private Cases	1	0	0	0	0	1
Manchester (Including Moss Side)...	226	4	*1	1	1	233
Totals	429	73	1	3	2	508

* One case of German Measles, sent in as such.

SCARLET FEVER.

During the year 429 cases of Scarlet Fever were admitted, which, with 84 similar cases remaining in hospital on January 1st, 1908, made a total of 513 cases of Scarlet Fever under treatment.

LIST C.—*Scarlet Fever only.*

District	Cases in Hospital on Jan. 1st, 1908	Admitted	Discharged	Died	Cases in Hospital on Jan. 1st, 1909	Total Cases treated	Death Rate per cent. on all cases discharged
Withington ...	15	53	58	0	10	69	...
Levenshulme...	2	31	21	2	10	33	8·69
Bucklow	22	103	92	1	32	125	1·07
Other Districts.	4	15	16	1	2	19	5·88
Private Cases...	1	1	2	0	0	2	...
Manchester ... (Including Moss Side)	40	226	233	4	29	266	1·68
Totals	84	429	422	8	83	514	1·86

Percentage fatality—1904—3·20.
" " —1905—3·88.
" " —1906—2·39.
" " —1907—0·70.
" " —1908—1·86.
} Average for five years—2·09 per cent.

Complications.

Nephritis.—Twelve cases of Scarlet Fever developed Nephritis (*Hæmaturia*) during 1908—a percentage of 2·79. In no case was the throat found on admission to be in a bad state. In four cases the throat symptoms were noted on admission to have been extremely mild.

The *percentage incidence* of Nephritis in this hospital in 1904 was 2·21; in 1905 was 1·51; in 1906 was 2·32; in 1907 was 3·8; and in 1908 was 2·79.

No fatality occurred amongst the 12 cases that developed Nephritis during 1908. Of cases of Nephritis three only have died in this hospital during the last five years; that is to say, three deaths from Nephritis out of 1,549 cases of Scarlet Fever—a *percentage fatality* of 0·19.

Otorrhœa.—Out of 422 cases of Scarlet Fever that passed through the hospital in 1908, 78 cases had either *single* or *double Otorrhœa.* Of these, 6 had such discharge when admitted; 72 developed ear discharge later—that is to say, a percentage of 17. This is a very high percentage, and it is difficult to assign a cause. The percentage in 1907 was 9·0. In 1907, 125 cases of Scarlet Fever (a percentage of 29·6) had *nasal discharge* at some period of their stay, and, therefore, had the nose douched for a longer or shorter period. Of these, 24 subsequently developed a discharge from one or both ears.

In 1908, 127 cases of Scarlet Fever were similarly douched on account of *nasal discharge* (a percentage of 30), and of these, 29 subsequently developed either single or double Otorrhœa.

It would appear therefore from these figures that we may have to look for some other cause than the douching of the nose to account for the higher percentage of Otorrhœa in 1908 than in 1907, and one factor that may have had something to do with the increase may have been that there has been a distinct increase in the severity of the type of Scarlet Fever seen in this hospital since about the middle of 1908. It is, I think, most commonly the cases with bad throat attacks that develop Otorrhœa.

The average length of stay in hospital in days:—

Of cases having *left Otorrhœa* was	61·9	days.
,, ,, *right Otorrhœa* was	64·2	,,
,, ,, *double Otorrhœa* was	84·1	,,
Of all cases of *Scarlet Fever* was	57·54	,,
,, ,, having *Otorrhœa* was	69·4	,,

In none of these cases was any serious operation required; in three only out of 72 was it necessary to make incisions over one or both mastoid processes. One case of the 72 died; three cases were sent out with Otorrhœa still persisting. All the remaining 69 cases were completely cured before leaving hospital, and in only one instance did a return case result, there being a recrudescence of the ear discharge.

Adenitis.—Of 422 cases of Scarlet Fever discharged during the year, 238 (56·3 per cent.) had enlargement of the submaxillary glands when admitted to hospital—27 having such enlargement on the right side only, 27 on the left side only, and 184 on both sides. Of these, 8 cases went on to develop *suppurative adenitis.* Only 11 cases out of the remaining 184 (5·9 per cent.) developed any glandular enlargement in the neck after admission to hospital, and one of these went on to suppuration. This difference I regard as being due in a great measure to the good effect of frequent douching of the throat.

Rheumatism.—Eight cases, 1·89 per cent. All commenced about 8th to 10th day.

Endocarditis.—Two cases, 0·47 per cent. Both recovered.

One case of Scarlet Fever developed *Pleurisy,* with effusion ; another suffered from a *Post-tonsillar Abscess.* Both recovered.

Four cases admitted as Scarlet Fever were found later not to be suffering from that disease, and *caught Scarlet Fever* in hospital in spite of early isolation. None of these cases died.

Three patients caught *German Measles* in hospital during the year, and nine cases of *Varicella* arose in spite of the immediate isolation of the first case, followed by the thorough disinfection of the whole ward.

In 112 cases (26·54 per cent.) *no complications* whatever were observed.

RETURN CASES.

Twenty cases discharged from this hospital after having had Scarlet Fever were suspected of causing "Return Cases" of that disease. Of these, seven may, I think, be fairly excluded.

The remaining 13 cases may be divided into "*Possibles,*" 2; "*Probables,*" 5; and "*Practical Certainties,*" 6 ;—in regard to the question of their having caused "return" cases.

Taking 13 as the number of return cases during 1908 out of 422 discharged, we get a *percentage* of 3·08. Of these thirteen—

1	was	discharged	from hospital	in June ;
1	was	,,	,,	,, July ;
2	were	,,	,,	,, October ;
1	was	,,	,,	,, November ;
5	were	,,	,,	,, December ;
2	were	,,	,,	,, January ;
1	was	,,	,,	,, February.

It will thus be seen that the summer months were practically free from "return cases," and that the greatest number arose in the winter months, and notably in December ; but it is also worthy of note that the average number of patients in the hospital during the summer months was about 60, and during the winter months about 90.

My own belief is that "return cases" could be reduced to a very small number indeed if one was able to separate the cases in hospital into several different groups, those most acute, from those less acute and both from those who were convalescent, keeping all cases that were ready to go home in another separate building for a few days before finally sending them out. *In addition to this, I think that a great deal of open air is necessary, and I should be disposed to ascribe chiefly to this factor the disparity existing between the numbers occurring in summer and in winter respectively.* Besides providing plenty of fresh air, it will, of course, in addition, be necessary to take all the most careful precautions in regard to each separate case, so that it may not leave hospital with any possible discoverable sign of infection still remaining.

The average length of stay in hospital of the 13 cases probably causing "return" cases during 1908 was 55·23 days, while the average length of stay of all cases of Scarlet Fever was 57·54 days, so that it cannot be said that the length of stay in hospital had much bearing upon the causing of "return" cases for this hospital during 1908, and my experience of previous years has supported this.

DIPHTHERIA.

During the year 78 cases of Diphtheria were under treatment in this hospital. Of these eight died—a *percentage* of 11·11. Of the cases that ended fatally four were males and four females. Six were between the ages of five and ten years. Five of these cases were of the *Hæmorrhagic* type, having subcutaneous hæmorrhages in various parts, and had been ill in every case for at least five or six days before admission. One case required immediate *tracheotomy* on admission, and lived for two days. She had been ill for some days before admission, and membrane extended well down the trachea; she died with *Broncho-pneumonia.* One case developed symptoms of *Cardiac failure,* and died six days after admission, and the eighth case, after progressing very favourably for six days, developed *Convulsions* (to which she had been always very liable) and died of *Heart Failure.*

It will thus be seen that, possibly, if some of these cases had come under treatment a little earlier than they did, the number of cases ending fatally here might have been much reduced.

Early in the year I became convinced that as a general rule I was withholding food from Diphtheria patients for rather too long, and that this possibly was a cause of some of the cases of *slight paralysis* which I was getting in the Diphtheria Ward. I therefore began to allow patients semi-solid and solid food much earlier than I had hitherto done. At about the same time, however, I read a short article by Dr. L. S. Dudgeon, in which he drew attention to the fact that in cases of Diphtheria that had died as the result of cardiac failure or general paralysis he had found marked *atrophy of the supra-renal glands,* and I therefore decided to give each day a small dose of *supra-renal gland extract*

to any rather bad case of Diphtheria. After a few months—whether as the result of the earlier feeding or as a result of the supra-renal extract—I noticed that I was getting practically no cases of even slight paralysis. I have at present stopped the use of supra-renal extract and am continuing to feed patients early, and I hope to be able to mention in a subsequent report the results of my observations with a view to further testing one or the other method of treatment on a larger scale.

I append a table with regard to the Diphtheria cases treated in this hospital during 1908 :—

List D.—*Diphtheria.*

District	In Hospital on January 1st, 1908		Admitted during 1908		Total	Discharged during 1908	Died during 1908	Remaining in Hospital on 1st January, 1909	Total
	M.	F.	M.	F.					
Withington	1	1	14	20	36	33	1	2	36
Manchester ..... (Including Moss Side)	0	0	2	2	4	3	0	1	4
Levenshulme	1	2	3	6	12	10	2	0	12
Bucklow	0	0	9	16	25	17	5	3	25
Other Districts	0	0	1	0	1	1	0	0	1
Totals	2	3	29	44	78	64	8	6	78
Totals	5		73		...	...	...	...	...

Stay in Hospital.

The average duration of stay in hospital remains at about the same figure as far as Scarlet Fever cases are concerned as in previous years, but Diphtheria cases have, on the average, had a shorter stay than usual.

	Average Stay—In days.				
	1904.	1905.	1906.	1907.	1908.
Cases of Scarlet Fever	58·5	59·74	57·23	55·50	57·54
Cases of Diphtheria	60·2	60·46	44·83	54·37	44·70
All cases	58·75	55·78	53·62	54·85	54·03

Details of the average stay in hospital of all cases, divided according to their districts and the disease from which each suffered, will be found in List E.

LIST E.—*Average stay in hospital in days. All cases discharged or who have died during 1908.*

District	DISCHARGED								Deaths—all Diseases		Total average stay in hospital in days	
	Scarlet Fever		Diphtheria		Double Infections		Altered Diagnosis					
	Cases	Average stay Days	Cases	Average stay Days	Cases	Average stay Days	Cases	Average stay Days	Number	Average length of life in Hospital	Cases	Average stay
Withington	58	59·36	33	42·66	0	.....	2	15	1	5	94	52·51
Levenshulme	21	54·71	10	47·4	0	.....	0	.....	4	10·75	35	47·6
Bucklow	92	58·17	17	48·16	1	95	0	.....	6	4·83	116	54·26
Other Districts	16	50·56	1	27	0	.....	0	.....	1	9	18	46·95
Private Cases	2	44	0	.....	0	.....	0	.....	0	.....	2	44
Manchester (Including Moss Side)	233	57·48	3	44·33	1	10	1	25	5	11·6	243	56·04
Totals	422	57·54	64	44·70	2	52·5	3	18·33	17	8·47	508	54·03

The following tables will show the fatality percentages and the average length of stay in hospital of cases from Manchester (including Moss Side) as compared with cases from all the other districts from which this hospital receives patients.

		Manchester, including Moss Side	Remaining Districts, including Withington, Levenshulme, Bucklow, Bowdon, Cheadle, etc.	Total
Fatality Percentage—all cases	1906	4·34%	3·92%	4·1%
	1907	0·91%	1·24%	1·08%
	1908	2·05%	4·52%	3·34%
Fatality Percentage—Scarlet Fever only	1906	4·09%	0·61%	2·39%
	1907	0·91%	0·95%	0·70%
	1908	1·68%	2·07%	1·86%
Stay in Hospital in days—all cases	1906	53·83	53·53	53·62
	1907	54·46	55·20	54·85
	1908	56·04	52·18	54·03
Stay in Hospital in days—Scarlet Fever only	1906	57·06	57·40	57·23
	1907	54·59	56·44	55·50
	1908	57·48	57·62	57·54
Number of originating cases causing "Return" Cases (S. F.)	1906	7	7	14
	1907	7	3	10
	1908	9	4	13
Percentage of above originating cases on all cases discharged	1906	4·26%	4·32%	4·29%
	1907	3·27%	1·44%	2·37%
	1908	3·86%	2·11%	3·08%

It will thus be seen that (with the exception of the "fatality percentage of all cases") the results obtained here have been practically the same in the case of patients from either the more open residential parts (such as Withington), the rural districts (such as those known as Bucklow districts), or the more crowded parts (such as Manchester).

The difference in the fatality rate for all cases is easily accounted for by the fact that eight deaths occurred amongst the 70 cases of Diphtheria sent in from districts other than Manchester, while only three cases of Diphtheria were received from Manchester, and all recovered.

By the following figures one may compare the total admissions during the ast five years, viz. :—

1904	254
1905	304
1906	443
1907	471
1908	508

The average number of patients in hospital on each day of the year in 1906 was 65; in 1907 was 66; and in 1908 was 75; and this latter number looks like being exceeded during 1909.

But of even more interest is it to note the increasing number of cases from Manchester (including Withington) that have been treated here, viz. :—

1905	135
1906	301
1907	316
1908	322

The above figures will, I think, help to show the increasing usefulness of this hospital.

REPORT BY MR. A. T. ROOK, SUPERINTENDENT OF THE SANITARY DEPARTMENT.

Sanitary Department,
Town Hall, Manchester.

In presenting to the Medical Officer of Health the report of the work transacted in the Sanitary Department for the year ending 30th April, 1908, I beg to state that the City, for inspection and other purposes, is divided into 29 Districts, to each of which one Sanitary Inspector has been assigned.

In addition to these, there is a Superintendent, one Chief Inspector, two Drainage, five Smoke, one Canal Boats, one Lodging-house, three Adulteration of Food, one Milkshops, six Factory and Workshops Inspectors, including two Female Inspectors, and three Drain Examiners. There is also a staff of 32 Clerks for clerical and other work.

In the House Drainage Department there is also a Manager, ten Clerks and eight Clerks of Works for supervising and measuring up work done by the contractors employed by the department in carrying out private drainage work.

The number of complaints of nuisances of various kinds made during the year was 13,097 :—

1,265 through the Medical Officer of Health's Department.
1,939 by the public.
49 through the Police.
9,844 by the Staff.

HOUSES LET IN LODGINGS.

Under the powers given by Section 90 of the Public Health Act, the bye-laws made thereunder have been enforced.

The number of houses on the register is 1,593. To these 4,001 day visits and 264 night visits have been paid. Seventy-three infringements of the regulations have been reported and dealt with.

DAIRIES, MILKSHOPS, AND COWSHEDS REGULATIONS.

Under this Order, which was made in July, 1879, and the Regulations thereunder in 1896, 3,066 milkshops and dairies and 63 cowkeepers are now on the register. The number of cows kept is 977. The number of visits to dairies, milkshops, and cowsheds was 3,044. Twenty-seven infringements of the regulations have been reported and dealt with.

The number of ice cream manufacturers on the Register is 522. The number of visits was 917. Three infringements of the regulations have been reported and dealt with.

WORKSHOPS, BAKEHOUSES, SHOP HOURS, AND SEATS FOR SHOP ASSISTANTS ACTS; ALSO THE HAIRDRESSERS AND BARBERS CLOSING ORDER.

Shop Hours and Seats for Shop Assistants Act

During the year the Acts have been well observed, only a few persons having been reported for infringements.

Workshop Acts

Much has been done to still further improve the condition of workshops, especially those in which females are employed, and every care has been taken to see that in all cases separate and suitable sanitary accommodation for the sexes has been provided.

Means of Escape in case of Fire

With regard to means of escape in case of fire, the whole of the factories and workshops in the City have been inspected, and with very few exceptions are now considered safe. The Bye-laws dealing with factories and workshops in which more than ten persons are employed come into force in October next, when all cases coming therein will be dealt with if necessary.

Periodical changes will, of course, from time to time take place in various ways which will bring buildings within the meaning of the Act, and necessitate the constant supervision of the Inspectors and action on the part of the authorities.

Bakehouses

The whole of the Cellar Bakehouses in the City (57) have been thoroughly repaired and put in a satisfactory sanitary condition, and certificates granted. The general sanitary conditions of all the Bakehouses in the City are well maintained, and are satisfactory.

Outworkers

Many visits have been paid to houses in various parts of the City in which out-work is carried on, as will be seen on reference to the following tabulated statement, but constant visitation is necessary to maintain the standard of cleanliness which is to be desired, especially in houses in which shirt-making, handkerchief-hemming, brace-making, and umbrella-covering, etc., is done.

The people, as a rule, appear willing to carry out any suggestion made by the Inspectors to keep their houses clean; but at the same time it is almost impossible for small houses, sometimes containing large families, to be kept in such a satisfactory condition as workshops.

The work done under the above Acts is shown in the following tables:—

TABLE SHOWING THE WORK DONE BY THE INSPECTORS UNDER THE SHOP HOURS AND SEATS FOR SHOP ASSISTANTS ACTS, THE HAIRDRESSERS' AND BARBERS' CLOSING ORDER, AND THE FACTORY AND WORKSHOPS ACT.

Number of District.	INSPECTOR	SHOPS — Shop Hours Act					SHOPS — Seats for Shop Assistants Act					SHOPS — Hairdressers and Barbers Closing Order					WORKSHOPS						OUT-WORKERS		Factories and Workshops not provided with proper means of escape in case of fire	BAKEHOUSES					
		Number of visits	Number of Infringements of Act reported	Number of cases in which Magisterial proceedings have been taken	Number registered during the year	Total number on register	Number of visits	Number of infringements of Act reported	Number of cases in which Magisterial proceedings have been taken	Number registered during the year	Total number on register	Number of visits	Number of infringements of Act reported	Number of cases in which Magisterial proceedings have been taken	Number registered during the year	Total number on register	Number of visits	Number in which Sanitary Defects were found	Number of Reports referred to H.M. Inspector (unregistered factories, &c.)	Number of cases in which Magisterial proceedings have been taken	Number registered during the year	Total number on register	Number of visits to houses where out-workers are employed	Number of houses found dirty.		Number of visits	Number in which Sanitary defects were found	Number of reports referred to H.M. Inspector of Factories	Number of cases in which Magisterial proceedings have been taken	Number registered during the year	Total number on register
1	Tolson	1	...	...	...	710	...	...	...	...	284	415	11	8	10	76	2302	268	80	7	189	1050	1	...	2	393	27	3	...	...	83
2	Partington.....	...	...	...	...	1163	...	...	...	...	500	339	6	6	4	148	2651	247	40	5	92	1021	5	...	4	594	19	2	...	8	179
3	Vernon	6	...	...	...	630	...	...	...	...	209	479	4	2	14	105	2579	272	103	5	211	1131	11	...	2	349	50	4	...	4	128
4	Rowe	9	...	...	...	671	...	...	...	...	288	313	15	11	12	119	3591	252	107	3	236	1234	13	..	2	585	27	5	...	2	199
...	Emma Coppock	2032	167	...	135	...	777	...	...	85	...	...	...	...	...	...	1596	128	1	10	...	...	927	21	...	...	...	...	..	...	..
...	Margaret Rigby	1119	203	2	188	...	495	...	...	40	...	...	...	...	...	...	879	83	...	13	...	...	2895	81	...	...	...	...	...	...	...
...	TOTALS.....	3167	370	2	323	3174	1272	...	...	125	1281	1546	36	27	40	448	14098	1250	331	43	728	4436	3852	102	10	1921	123	14	...	14	589

TABLE SHOWING THE NUMBER AND CLASSIFICATION OF PERSONS EMPLOYED AS OUTWORKERS BY FIRMS WITHIN THE CITY, AND THE NUMBER OF SUCH FIRMS.

TRADES	No. of Employers	No of Outworkers or Contractors employed
Tailors	200	960
Shirt Makers	57	982
Dress, Mantle, Costume, &c., Makers	34	298
Underclothing and Pinafore Makers	75	600
Handkerchief Hemmers	17	431
Boot, Slipper, &c., Makers	50	138
Umbrella Trimmers	22	330
Quilt, Cushion, &c., Makers	6	79
Stay and Corset Makers	2	3
Cabinet Makers, Upholsterers, &c	9	27
Paper Bag Makers	2	13
Rubber Workers	2	2
Picture Framers	1	4
Opticians	1	1
Hair Pad and Frame Makers	2	4
Cap Makers	2	10
Belt and Trimming Makers	4	81
Embroiderers	5	32
Twine and Rope Makers	1	4
Knitting	2	2
Shutter and Blind Makers	1	1
Totals	495	*4002

*3453 of these are in the City, the remainder are in the districts of other Local Authorities to whom lists showing the names and addresses have been sent.

Name of Offender	Address of Offender	Offence	Amount of Fine Imposed £ s. d.	Amount of Costs ordered to be Paid £ s. d.	Dismissed or Withdrawn
		SHOP HOURS ACT.			
Maurice Benning	346, Stretford Road	Not exhibiting Abstract of Shop Hours Act in shop	.....	0 6 0	Withdrawn
Walter E. Hands	253, Chester Road	Ditto	0 2 6	0 2 6	
John Thornburn	39, Gorton Lane	Ditto	0 2 6	0 2 6	
Evans Limited	401, Oxford Road	Ditto	.....	.....	Dismissed
Elizabeth Littlejohn...	95, Wilmslow Road	Ditto	0 2 6	0 2 6	
Winifred Blake	5, Mabfield Bldgs., Fallowfield ..	Ditto	0 2 6	0 2 6	
	HAIRDRESSERS AND BARBERS	CLOSING ORDER, 1904.			
Ralph Williams	312, Mill Street, Bradford	Keeping his shop open after the closing hour fixed by the Order	0 5 0	0 5 0	
Samuel Washington ..	5, Tonman Street, Deansgate ...	Ditto	0 1 0	0 2 6	
Simon Seidman	79, Red Bank	Ditto	0 2 6	0 2 6	
Thomas Shaw	105, Oxford Road, Chorlton-on-Medlock	Ditto	0 2 6	0 2 6	
David R. Chapman...	188, Brunswick Street, Chorlton-on-Medlock	Ditto	0 2 6	0 2 6	
Robert Postlethwaite..	37, Renshaw Street, Hulme.....	Ditto	0 2 6	0 2 6	
Thomas Harcourt ...	2a, Lower Byrom Street	Ditto	0 2 6	0 2 6	
		Carried forward	1 8 6	1 19 0	

PROSECUTIONS FOR OFFENCES, WITH RESULTS—*continued.*

Name of Offender	Address of Offender	Offence	Amount of Fine Imposed	Amount of Costs ordered to be Paid	Dismissed or Withdrawn
			£ s. d.	£ s. d.	
		Brought forward	1 8 6	1 19 0	
		FACTORY AND WORKSHOP ACTS.			
Charlotte Moores.....	27-29, Dean Street, Port Street...	Occupying a workshop unfit for use on sanitary grounds	.....	0 3 6	Withdrawn
Barnett Moses	95, Moreton Street, Cheetham ..	Having his workshop overcrowded	0 5 0	0 5 0	
Thomas Farron	46a, Market Street	Neglecting to repair the roofs, and repair and plaster the ceilings and walls of the workshop, 88 and 90, Red Bank	.....	.....	Withdrawn (work done)
Saml. Kershaw & Son..	16, Deansgate	Neglecting to provide and maintain sufficient and satisfactory ventilation to the workshop, No. 13, Bradshaw Street, Shudehill	.....	0 3 6	Withdrawn (work done)
Daniel Simpson & Son.	John Dalton Street	Neglecting to repair and make watertight the roof of the workshop, No. 9, Rumford Street, Chorlton-on-Medlock	.....	.....	Withdrawn (work done)
Ditto	Ditto	Neglecting to repair and make watertight the roof of the workshop, No. 11, Rumford Street, Chorlton-on-Medlock	.....	.....	Withdrawn (work done)
		Carried forward	1 13 6	2 11 0	

PROSECUTIONS FOR OFFENCES, WITH RESULTS—*continued.*

Name of Offender	Address of Offender	Offence	Amount of Fine Imposed	Amount of Costs ordered to be Paid	Dismissed or Withdrawn
			£ s. d.	£ s. d.	
		Brought forward	1 13 6	2 11 0	
	FACTORY AND WORKSHOP	ACTS—*continued.*			
Mark Greenberg and Isaac Kaufman	2a, Chapman Street	Neglecting to lime-wash the walls and ceilings of their workshop and the pail-closet in connection therewith	.....	0 3 6	Withdrawn (work done)
Edward Ruttle	27, Bootle Street	Neglecting to lime-wash the walls and ceiling of his workshop, and cleanse the pan, seat, and floor of the water-closet in connection therewith	.....	0 3 6	Withdrawn (work done)
Jane Barry.....	147, Moss Lane East	Not forwarding to the Local Authority a list of persons employed by her as outworkers or contractors	.....	0 3 6	Withdrawn
James Hulme	73, Stretford Road	Ditto	0 5 0	0 10 0	
Richard Murray	74, Mosley Street	Ditto	.....	0 3 6	Withdrawn
Kate Mellor	288, Stretford Road	Ditto	.....	0 3 6	Ditto
Noble & Hall	89, Radnor Street	Ditto	.....	0 3 6	Ditto
Rebecca Sinclair	35, John Dalton Street	Ditto	.....	0 3 6	Ditto
Alexander Reid	290, Stretford Road	Ditto	.....	0 3 6	Ditto
		Carried forward	1 18 6	4 9 0	

PROSECUTIONS FOR OFFENCES, WITH RESULTS—*continued.*

Name of Offender	Address of Offender	Offence	Amount of Fine Imposed	Amount of Costs ordered to be Paid	Dismissed or Withdrawn
			£ s. d.	£ s. d.	
		Brought forward	1 18 6	4 9 0	
	FACTORY AND WORKSHOP	ACTS—*continued.*			
Jack Jacobson	106, Gt. Ancoats Street	Not forwarding to the Local Authority a list of persons employed by him as outworkers or contractors	0 5 0	0 8 6	
Reuben Horwich	41, Corporation Street	Ditto	1 0 0	0 14 0	
Samuel Norton	123, Alexandra Road	Ditto	.....	0 4 0	Withdrawn (premises vacated)
John Goodison	8, Pleasant Place, Ashton Old Road	Occupying a bakehouse unfit for use on sanitary grounds	.....	.....	
Samuel Shaw	229, Ashton Old Road	Allowing the premises, No. 8, Pleasant Place, to be used as a bakehouse which were unfit to be used on sanitary grounds			Ditto
		Total	£3 13 6	£5 15 6	

Adulteration of Food and Drugs, and Margarine Acts.

Table showing the number of Articles of Food and Drugs procured for Analysis, the number Adulterated, the number informally purchased or in which no proceedings were taken, and the number of cases in which Magisterial Proceedings were taken, together with the Decisions and the Total Amount of Fines imposed from May 1st, 1908, to April 30th, 1909.

Article	Number of Samples obtained	Number Adulterated	Number not Adulterated	Number Summoned before Magistrates	Number Fined	Number ordered to pay Costs only	Number Dismissed or Withdrawn	Amount of Fines Imposed	Amount of Costs ordered to be Paid
								£ s. d.	£ s. d.
Arrowroot	6	...	6	...	...	...	...	.....	.....
Bacon	...	...	...	...	...	...	...	.....	.....
Baking Powder	19	...	19	...	...	...	...	.....	.....
Beef Dripping	...	...	...	...	...	...	...	.....	.....
Beer	76	...	76	...	...	...	...	.....	.....
Bread	44	...	44	...	...	...	...	.....	.....
Butter	367	*27	340	12	12	...	...	26 18 6	22 8 0
Buttermilk	...	...	...	...	...	...	...	.....	.....
Camphorated Oil	7	...	7	...	...	...	...	.....	.....
Castor Oil	..	...	...	...	...	...	...	.....	.....
Cheese	72	...	72	...	...	...	...	.....	.....
Chicory	...	...	...	...	...	...	...	.....	.....
Cider	...	...	...	...	...	...	...	.....	.....
Cocoa	32	...	32	...	...	...	...	.....	.....
Cod Liver Oil	...	...	...	...	...	...	...	.....	.....
Coffee	122	†15	107	6	6	...	...	7 12 0	10 16 0
Confectionery	36	...	36	...	...	...	...	.....	.....
Cream	8	...	8	...	...	...	...	.....	.....
Drugs	60	...	60	...	...	...	...	.....	.....
Fish (tinned)	7	...	7	...	...	...	...	.....	.....
Flour	45	...	45	...	...	...	...	.....	.....
Fruit (tinned)	..	...	...	...	...	...	...	.....	.....
Honey	...	...	...	...	...	...	...	.....	.....
Jams	50	...	50	...	...	...	...	.....	.....
Jelly	...	...	...	...	...	...	...	.....	.....
Ketchup	...	...	...	...	...	...	...	.....	.....
Lard	66	...	66	...	...	...	...	.....	.....
Margarine	34	...	34	...	...	...	...	.....	.....
Meats (tinned)	...	...	...	...	...	...	...	.....	.....
Milk	1107	‡36	1071	35	25	2	8	27 9 6	38 14 10
Milk (skimmed)	...	...	...	...	...	...	...	.....	.....
Milk (condensed)	...	...	...	...	...	...	...	.....	.....
Mineral Waters, &c.	46	...	46	...	...	...	...	.....	.....
Carried forward	2204	78	2126	53	43	2	8	62 0 0	71 18 10

* 15 of these were informally purchased. † 9 of these were informally purchased.
‡ Cautioned by Committee.

ADULTERATION OF FOOD AND DRUGS, AND MARGARINE ACTS—*continued.*

ANALYSIS—*continued.*

Article	Number of Samples obtained	Number Adulterated	Number not Adulterated	Number Summoned before Magistrates	Number Fined	Number ordered to pay Costs only	Number Dismissed or Withdrawn	Amount of Fines Imposed	Amount of Costs ordered to be Paid
								£ s. d.	£ s. d.
Brought forward .	2204	78	2126	53	43	2	8	62 0 0	71 18 10
Mustard..	35	...	35	...	...	...	...	.....	.....
Oatmeal.....	41	...	41	...	...	...	...	.....	.....
Olive Oil	2	...	2	...	...	...	...	.....	.....
Pearl Barley	...	...	...	...	...	...	...	.....	.....
Pepper	77	§1	76	...	...	...	...	.....	.....
Pickles	...	...	...	...	...	...	...	.....	.....
Porter	...	...	...	...	...	...	...	.....	.....
Rice, Tapioca, &c....	21	...	21	...	...	...	...	.....	.....
Shrimps	...	...	...	...	...	...	...	.....	.....
Spices	43	...	43	...	...	...	...	.....	.....
Spirits	228	13	215	13	10	3	...	6 2 0	17 5 6
Sugar.....	...	...	...	...	...	...	...	.....	.....
Tea	43	...	43	...	...	...	...	.....	.....
Treacle and Golden Syrup	16	...	16	...	...	...	...	.....	.....
Tripe	...	...	...	...	...	...	...	.....	.....
Vegetables (tinned)	...	...	...	...	...	...	...	.....	.....
Vinegar.....	3	...	3	...	...	...	...	.....	.....
Wines	11	...	11	...	...	...	...	.....	.....
Totals.....	2724	92	2632	66	53	5	8	68 2 0	89 4 4

§ Informally purchased.

Other Offences against the Acts.

Offence	No. Summoned	No. Fined	No. Dismissed or Withdrawn	Total amount of Fines imposed
				£ s. d.
Refusing to serve Inspector with Samples of Food	...	...	...	.....
Giving False Warranty	...	...	...	.....
Obstructing Inspector in the execution of his duty.....	...	...	...	.....
Selling Milk from a vehicle which had not the name and address of the person inscribed thereon	1	1	...	0 1 0
Selling Skimmed Milk from a can unlabelled.....	...	...	...	.....
Selling Margarine in an unstamped wrapper.....	..	...	...	.....
Ditto Margarine Cheese	...	...	...	.....
Totals.....	1	1	...	£0 1 0

SMOKE NUISANCES.

For the abatement of smoke nuisances, the five Inspectors appointed specially for this work have taken 613 timed observations of half-an-hour each, with the result that 117 notices for the abatement of nuisances have been served. Proceedings before the Magistrates have been ordered in 206 cases out of 238 offences reported. These cases were disposed of as follows :—

Two hundred and twenty-two were summoned before the Justices, in 120 of which fines were imposed amounting to £280 2s., and costs £78 15s. 6d. Thirty-five were ordered to pay costs only.

Thirty-seven orders of abatement were granted and served, 30 cases were excused, dismissed, or withdrawn.

Much attention during the past year, as will be seen by the above, has been given to the nuisance caused by the emission of black smoke, not only from the furnaces connected with boilers in mills, warehouses, and other works, but also from chemical and other industries, and the efforts made have already resulted in a considerable reduction of the nuisance.

Communications have also been made to adjoining Authorities in regard to smoke nuisances committed in their districts, and urging more stringent measures to bring about an abatement of the nuisance from which the citizens of Manchester are the sufferers.

CANAL BOATS ACTS.

The number of canal boats on the register is 533.

The number of inspections made was 2,269, resulting in two infringements of the Act being discovered, which were referred to the Justices to be dealt with. In both of these cases fines were imposed amounting to 5s., with costs 7s

Caution notices were sent to the owners or masters of 45 boats.

OFFENSIVE TRADES.

The number of offensive trades on the register is 807. These have been placed under close supervision, and periodical visits paid.

UNHEALTHY DWELLINGS.

During the year 2,680 houses were certified to be dealt with by the Sanitary Committee.

Of these, 2,555 were ordered to be closed.

In the majority of these the owners arranged to make alterations to meet the requirements of the Corporation.

PARTICULARS RELATING TO THE OPERATIONS OF THE CLEANSING DEPARTMENT.

Cleansing Department,
Town Hall, Manchester,
June, 1909.

Dear Sir,—There are within the City:* pail-closets, 35,415; ash-boxes, 68,458; ash-bins, 36,675; midden-privies, 4,497; wet middens, 1,903; dry middens, 778; water-closets, 99,955; and cesspools, 12. The pail-closets are systematically emptied at regular intervals—once, twice, or thrice weekly, as necessity demands. The midden-privies are emptied as required. The contents of the pail-closets are taken to Holt Town and Water Street. At Holt Town the fæcal matter is dried into concentrated manure. The dry refuse is consumed in the Galloway boilers, and generates the steam required for working the machinery. The worthless fine ash, which cannot be consumed, is deposited at the nearest tip at Clayton Vale. The privy refuse and fæcal matter, which is taken to Water Street, is sent away in its crude state as nightsoil to Carrington and Chat Moss Estates and to farmers in Cheshire. Dry combustible matter is passed into the destructor furnaces or under the Galloway boilers at Water Street, and there destroyed. A large quantity of fine ash at Water Street is used as an absorbent for the fæcal matter from the pail-closets.

The market garbage, of which we have 5,073 tons per annum, is carted to Water Street, and destroyed in the furnaces. Slaughter-house refuse is collected from the abattoirs and private slaughter-houses and sent to Holt Town, where it is passed through dryers, and the dry material is then added to the concentrated manure. Street sweepings are generally deposited at the nearest depot, and after being allowed to drain are carted to the nearest tip, or to the Water Street Depot, from whence they are sent away by boat to farmers or to the Committee's Estates. The total quantity of material collected by this Department during the past year amounted to 332,120 tons.

We have within the City about 41 destructor furnaces of various kinds, and last year 11,473 tons of mortar was made from the clinker obtained from such furnaces.

* Inclusive of the District of Moss Side.

We employ about 51 "orderly" youths and men, who collect horse-droppings and litter from the streets, and deposit the same in the bins fixed in the footpaths. The contents of the bins are removed twice daily, and taken to the nearest depot.

Acting upon instructions received from you, special pails and lids are supplied for all cases of Enteric Fever; labels are attached to the pails asking the occupants of the house to use disinfectants, which are supplied with the pails; the pails are left in the yard, and not placed in the ashplace. The occupants are requested to use this special pail for the reception of the fæcal matter and washings from the patient only. The pails are removed in a specially-constructed vehicle, and taken to Holt Town Depot, where the contents are destroyed.

With regard to the cleansing of passages, we have a staff of about 54 men engaged specially upon this work. They regularly, at least once a week, cleanse the back passages in certain districts, and during last year 427,802 swillings and cleanings were effected in courts and passages.

During the year, 90,820 barrels of water were used in degging the streets, and 328,279 grids were unstopped.

During the past 18 years, we have deposited upon the various tips within the City the following quantities of material, viz.:—In 1892, 99,866 tons; 1893, 109,078 tons; 1894, 103,949 tons; 1895, 113,836 tons; 1896, 107,883 tons; 1897, 99,658 tons; 1898, 96,635 tons; 1899, 104,481 tons; 1900, 95,138 tons; 1901, 64,781 tons; 1902, 117,619 tons; 1903, 180,985 tons; 1904, 141,999 tons; 1905, 118,093 tons; 1906, 109,446 tons; 1907, 134,072 tons; 1908, 120,581 tons; and in 1909, 123,183 tons. The bulk of this material was deposited on the tips at Clayton and Harpurhey. It is composed principally of dry ashes, street sweepings, and bell-dust. Occasionally the contents of dry middens are sent there. During last year 16,353 tons of material was sent to Carrington Estate and 54,531 to Chat Moss Estate.

Yours faithfully,

R. WILLIAMSON,

Superintendent.

Dr. Niven,

Medical Officer of Health,

Town Hall, Manchester.

MEAT INSPECTION.

The Markets Committee present the following report:—

Your Committee submit, for the information of the Council, the following report with reference to unwholesome meat, fish, etc., condemned and destroyed in this City under the Public Health Acts of 1875 and 1890, and also a report dealing with matters under the Diseases of Animals Acts, during the year ending December 31st, 1908:—

Unwholesome Food.

Meat and Fish.

Beef	282,430 lbs.
Mutton	15,076 ,,
Veal	8,028 ,,
Pork	40,476 ,,
Venison	220 ,,
Imported Offals	14,921 ,,
	361,151 ,,
Fish	232,166 lbs.
Shellfish	76,905 ,,
	309,071 ,,
Rabbits	11,705 head 2 bdls.

Game.

Hares	164 head
Capercailzies	1 ,,
Curlew	1 ,,
Snipe	1 ,,
Plover	1 ,,
Partridge	67 brace
Pheasants	33½ ,,
Ptarmigan	25½ ,,
Black Game	23½ ,,
Grouse	104 ,,
Quails	10½ ,,
Woodcock	1 ,,

Poultry.

Turkeys	10 head
Fowl	179 ,,
Geese	3 ,,
Ducks	54 ,,
Pigeons	66 ,,

Miscellaneous.

Fruit.

Bananas	10½ crates
Tomatoes	260 packages 53 tins
Melons	7 crates
Grapes	13 barrels
Strawberries	133 baskets
Blackberries	50 ,,
Raspberries	58 packages
Black Currants	242 baskets
Plums	400 ,,
Pears	59 ,, 24 barrels
Oranges	37 boxes
Apples	1 bag 8½ barrels
Cherries	68 packages
Apricots	27 boxes
Gooseberries	65 baskets
Damsons	34 ,,
Chestnuts	62½ bags

Vegetables.

Onions	53 packages
Cress	128 ,,
Marrows	8 ,,
Sprouts	101 bags
Peas	83 ,,
Potatoes	16½ barrels and 1 railway truck load (8,400 lbs.)
Salads	1,152 baskets 5 packages
Radishes	12 ,,
Cabbage	152 crates
Parsley	2 packages
Yeast	10 bags
Wheat	24 sacks
Chicory	4 cases
Eggs	½ case

With the exception of 1,774 lbs. of meat, 1,512 lbs. of fish, and 2 barrels of apples, which were seized while deposited or exposed for the purpose of sale, the above quantities were surrendered by the trade after being condemned by the inspectors. (The term "surrendered" includes cases in which the inspectors have discovered the diseased meat, etc., in the course of their duty.)

The number of carcases, portions of carcases, consignments of fish, etc., condemned during the year has been 6,654, from the following causes:—

Decomposition	2,606	Choked	33
Tuberculosis	1,798	Nephritis	31
Fluke Disease	339	Necrosis	30
Abscesses	185	Pericarditis	25
Dropsy	150	Peritonitis	24
Cirrhosis	150	Pleurisy	21
Degeneration	146	Septicæmia	14
Emaciation	135	Black Quarter	11
Tumour	117	Inflammation	9
Hydatids	104	Unclean	8
Fever	104	Pyæmia	8
Parasitic	101	Septic Metritis	6
Congestion	89	Bone Taint	5
Asphyxiation	75	Unseasonable	5
Pneumonia	57	Ostitis	4
Actinomycosis	52	Icterus	4
Mammitis	54	Anthrax	3
Unmarketable	75	Hepatitis	1
Swine Fever	39	Enteritis	1
Injured	34	Melanosis	1

Of the Meat, Fish, etc., there was Condemned:—

In the Abattoirs and Carcase Market (162,885 lbs. being dressed meat consigned from places other than the City, 14,921 lbs. of which was imported offals.)	339,241 lbs.
,, Pig Market	12,278 ,,
,, Private Slaughter-houses	1,588 ,,
,, Railway Stations	9,764 ,,
,, Shops	1,104 ,,
,, Rusholme Abattoirs	819 ,,
,, Moss Side Abattoirs	103 ,,
At a Farm	100 ,,
In the Cold Air Stores, Elm Street	1,412 ,,
,, Cold Stores, Copperas Street	26 ,,
,, Warehouses	973 ,,
,, Triperies	50 ,,
,, Smithfield Fish Markets	302,764 ,,
	670,222 lbs.

Of the game, rabbits and poultry, fruit and vegetables, etc., there was condemned :—

At the Smithfield Fish Markets—10,480 head and 2 bundles rabbits, 104 brace grouse, 67 brace partridge, 33½ brace pheasants, 25½ brace ptarmigan, 23½ brace black game, 66 head pigeons, 54 head ducks, 164 head hares, 179 head fowl, 10 head turkeys, 1 head capercailzies, 3 head geese, 10½ brace quail, 1 brace woodcock, 1 head curlew, 1 head snipe, 1 head plover.

At the Smithfield Fruit and Vegetable Market—628 head rabbits, 13 bags peas, 12 packages radishes, 16½ barrels potatoes, 2 packages parsley, 76 crates cabbage, 62½ bags chestnuts, 208 baskets black currants, 275 baskets plums, 128 packages cress, 8 packages marrows, 259 packages tomatoes, 58 packages raspberries, 59 baskets and 24 barrels pears, 50 packages onions, 93 bags sprouts, 32 baskets damsons, 41 baskets blackberries, 1,152 baskets and 5 packages salads, 27 boxes apricots, 8½ barrels and 1 bag apples, 68 packages cherries, 10 baskets gooseberries, 82 baskets strawberries, 37 boxes oranges, 13 barrels grapes, 10½ crates bananas, 7 crates melons, 4 cases chicory.

At the Railway Stations—9 baskets blackberries, 2 baskets damsons, 70 bags peas, 1 truck load (8,400lbs.) potatoes, 76 crates cabbage, 10 bags yeast, 55 baskets gooseberries, 125 baskets plums, 51 baskets strawberries, 1 package tomatoes, 8 bags sprouts, 3 packages onions, ½ case eggs.

At the Cold Air Stores, Elm Street—384 head rabbits.

At the Cold Stores, Copperas Street—115 head rabbits, 34 baskets black currants.

At the City Abattoirs—98 head rabbits.

At Warehouses—24 sacks wheat, 53 tins tomatoes.

In addition to thorough inspection at the Abattoirs and Markets, 2,976 visits have been made to private slaughter-houses (55 being at the request of the butchers) and 12,513 carcases examined, 38 carcases and portions of 30 others being condemned as unfit for human food.

8,531 visits have been made to the meat, fish, fruit, and provision shops, and in 43 cases the shopkeepers were severely cautioned for having small amounts of unsound food in their possession.

195 visits have been made to the railway stations to prevent the distribution of unwholesome food consigned to the City.

Frequent visits have been made to the triperies, sausage and pie factories.

Five orders for the destruction of unsound food have been obtained at the City Police Courts during the year.

2,512 certificates have been granted, chiefly to commission agents, for the purpose of being forwarded to the consignors.

Contagious Diseases of Animals.

During the year there has been no outbreak of glanders in the City.

There have been 7 outbreaks of Swine Fever within the City, 106 pigs being attacked by the disease. There has been one prosecution under the Swine Fever Order of 1894 for failing to notify the existence of disease; a fine of £1 and 9s. costs was imposed.

Seventeen outbreaks of Parasitic Mange in horses have been dealt with by the Inspectors under the Manchester (Parasitic Mange) Order of 1906 and the Lancashire (Parasitic Mange) Order of 1908, 40 horses being affected with the disease. There were three prosecutions under this Order for failing to notify the existence of this disease, and fines amounting to £13 and 27s. costs imposed.

There have been three cases of Anthrax, these being dressed carcases consigned to the Carcase Market from country districts. The circumstances in each case have been reported to the Board of Agriculture and Fisheries and to the County Authorities, who have taken proceedings in each case against consignors.

The Pig Market has been visited daily by a Veterinary Inspector under the Swine Fever Orders, 1894 and 1908, the Swine Fever (Regulation of Movement) Orders, 1903 and 1908, and the Swine Fever (Movement from Ireland) Orders of 1904 and 1906, all cases of infringement of such Orders being immediately reported to the Board of Agriculture and Fisheries, or dealt with by the Inspectors. There has been one outbreak of Swine Fever in this Market, which was dealt with by the Board of Agriculture and Fisheries.

390 visits have been made to the Railway Stations and Cattle Dock for the purposes of the Animals (Transit and General) Order of 1895.

The Horse Market has been visited each month by a Veterinary Inspector.

On behalf of the Committee,

(Signed) D. McCabe,

Chairman.

Town Hall, Manchester,
19th February, 1909.

REPORT ON THE HEALTH OF THE WITHINGTON DISTRICT IN 1908.

By Dr. Carnwath, District Medical Officer of Health.

I beg to submit the following report on the health of the Withington District of Manchester during the past year.

The population of the district in June, 1908, was estimated at 44,287, distributed over the several townships as follows:—

Withington (including Whalley Range)	16,884
Didsbury	10,874
Chorlton-cum-Hardy	14,395
Burnage	2,134

The total number of deaths recorded during the year was 482—238 males and 244 females. Of these 413 were of persons resident within the district, 43 of persons resident in the Chorlton Union Workhouse, and 26 of persons resident in localities outside the district.

Calculated on the above figures the death-rate for the year is 10·8, or, corrected for age and sex, 11·3. This differs little from the corresponding rate for 1907 (10·4 uncorrected).

A slight fall in the birth-rate occurred. The total number of births was 861, which gives a birth-rate of 19·4, as compared with 22·3 in the previous year.

The following table gives the numbers of births and deaths occurring during the year in the several townships, together with the corresponding birth-rates and death-rates:—

	Births	Deaths	Birth-rate	Death-rate
Withington (including Whalley Range)..	339	205	20·0	12·1
Didsbury	178	108	16·3	9·9
Chorlton-cum-Hardy..	288	148	20·0	10·3
Burnage	56	21	26·2	9·8

As in previous years, Burnage is remarkable for its comparatively high birth-rate.

Table I.—Main causes of death in 1908 *and preceding seven years.*

Name of Disease	1901	1902	1903	1904	1905	1906	1907	1908
lpox	...	...	...	...	...	...	...	...
les	1	17	6	1	7	4	2	14
et Fever	1	7	3	3	1	...	...	...
pping Cough	5	1	12	9	2	2	8	9
theria and Memb. Croup ...	6	6	2	3	4	6	...	5
p...	...	...	1	1	...	...	...	...
r { Typhus	...	...	...	...	...	...	...	...
r { Enteric	1	1	1	2	2	...	3	2
r { Other continued	...	...	...	...	...	...	...	1
emic Influenza	10	11	5	7	11	9	7	8
era	...	...	...	...	...	...	...	...
ue	...	...	...	...	1	...	...	...
rhœa	24	3	7	7	8	17	4	14
ritis	4	1	3	4	2	4	3	9
peral Fever	1	...	...	...	1	...	1	...
ipelas	3	1	2	1	2	1	2	...
r Septic Diseases	3	7	2	2	2	2	1	4
isis	26	27	38	29	20	35	39	33
r Tubercular Diseases	17	11	14	11	9	15	15	21
er, Malignant Disease	37	32	35	31	32	28	28	35
chitis	24	30	22	50	35	39	35	17
umonia	42	35	21	33	26	31	29	35
risy	...	2	3	1	2	...	3	...
r Diseases of Respiratory rgans	1	6	4	1	3	...	4	3
holism, Cirrhosis of Liver ...	4	8	10	11	5	6	9	4
ereal Disease	...	1	3	...	...	...	1	2
nature Birth	2	5	13	13	9	13	10	16
ases and accidents of Parurition	2	...	5	2	...	...	1	...
rt Diseases	53	36	36	45	46	42	56	60
dents	6	6	5	7	2	12	10	15
ides	3	7	5	6	3	8	2	5
ries	1	...	1	2	...	...	...	...
other causes	136	151	151	157	147	174	144	170
Total	413	412	410	439	382	448	417	482

he main causes of death in the age-period 1–5 were :—Measles 4, Whooping Cough 4, ercular Diseases other than Phthisis 9, Pneumonia 7, Diphtheria 2, Diarrhœa and Enteritis 6.

Between the ages 5–15 other Tubercular Diseases accounted for 5 deaths, Measles for 4, Whooping Cough 2, Diphtheria 2, Pneumonia 1.

The number of deaths from Measles—larger than in any year since 1902—emphasises the serious nature of this disease, and shows clearly the necessity of using stringent measures for its control, where such are likely to ensure even a partial measure of success.

In the following table are given the annual rates of mortality per 1,000 persons living at all ages from certain diseases and groups of diseases.

Table II.—Death-rates per thousand from the principal diseases given in the previous table, 1901 *to* 1908.

Name of Disease	1901	1902	1903	1904	1905	1906	1907	1908
Measles	0·02	0·48	0·16	0·02	0·18	0·10	0·05	0·31
Scarlet Fever	0·02	0·20	0·08	0·08	0·02	...	...	...
Whooping Cough	0·14	0·02	0·33	0·24	0·05	0·05	0·20	0·20
Diphtheria and Membranous Croup	0·17	0·17	0·05	0·08	0·10	0·15	...	0·11
Enteric Fever	0·02	0·02	0·02	0·05	0·05	...	0·07	0·04
Epidemic Influenza ...	0·29	0·30	0·13	0·18	0·28	0·20	0·17	0·18
Diarrhœa	0·70	0·08	0·19	0·18	0·21	0·43	0·10	0·31
Phthisis	0·76	0·77	1·05	0·78	0·52	0·89	0·97	0·72
Other Tubercular Diseases	0·50	0·31	0·38	0·29	0·23	0·38	0·37	0·47
Cancer, Malignant Diseases	1·08	0·91	0·97	0·83	0·84	0·71	0·70	0·79
Diseases of the Respiratory Organs	1·97	2·08	1·38	2·29	1·73	1·79	1·77	0·06
Alcoholism, Cirrhosis of Liver	0·11	0·22	0·27	0·29	0·13	0·15	0·22	0·09
Heart Diseases	1·55	1·02	1·00	1·21	1·21	1·07	1·40	1·35

Below are given in some detail the particulars relating to mortality amongst infants.

The 92 deaths under one year correspond to an annual infantile death-rate of 106·8. As is seen from Table III, the largest number of deaths occurred within the first three months of life. What may be regarded as "antenatal causes" (indicated by prematurity, congenital defects, atrophy, some cases of convulsions, and lung diseases) were responsible for at least 25 to 30 per cent., other diseases of the respiratory system for about 16 per cent., and Diarrhœa for an equal number. The most fatal of the specific febrile diseases was Measles.

Illegitimacy.—In 1908, of the 861 children born 22 were illegitimate. During the same period 11 deaths occurred amongst illegitimate children under one year, and 81 amongst legitimate. These figures yield an infantile death-rate of 500 for the former and 96·6 for the latter.

Table III.—Causes of deaths under 5 years in 1908.

	0–3 Months	3–6 Months	6–12 Months	Total under 1 year	1–2 years	2–3 years	3–4 years	4–5 years	Total under 5 years
Measles	—	—	6	6	4	—	—	—	10
Whooping Cough	1	—	—	1	3	—	—	2	6
Scarlet Fever	—	—	—	—	—	—	—	—	—
Diphtheria and Membranous Croup	—	—	—	—	—	1	1	—	2
Influenza	—	1	2	3	—	—	—	—	3
Tetanus	1	—	—	1	—	—	—	—	1
Syphilis	1	—	—	1	—	—	—	—	1
Diarrhœa	4	7	5	16	5	—	—	—	21
Tuberculosis	1	2	3	6	4	1	3	1	15
Hydrocephalus	—	—	—	—	—	1	—	1	2
Premature Birth	15	—	—	15	—	—	—	—	15
Atrophy	4	1	3	8	—	—	—	—	8
Congenital Defects	1	—	—	1	—	—	—	—	1
Convulsions	7	—	1	8	1	—	—	—	9
Rickets	—	—	1	1	—	—	—	—	1
Laryngitis	—	—	—	—	—	—	1	—	1
Diseases of Respiratory System	4	3	8	15	2	3	2	—	22
Brain Disorder (other)	—	—	1	1	—	—	—	—	1
Found dead in bed	1	—	—	1	—	—	—	—	1
Suffocation	1	1	—	2	—	—	—	—	2
Other causes	3	1	2	6	1	1	—	—	8
	44	16	32	92	20	7	7	4	130

Infantile Mortality.

Deaths under one year per thousand births. Different townships compared from 1897 to 1908.

Township	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907	1908
Withington	92	142	157	94	175	103	139	110	89	96	107	88
Didsbury	81	118	50	128	89	80	92	93	66	144	76	123
Chorlton-cum-Hardy	84	152	90	121	78	105	80	105	67	104	79	107
Burnage	165	132	102	114	255	95	89	104	164	145	109	160

INFECTIOUS DISEASES.

Smallpox.—No case occurred.

Measles.—The following table shows the distribution of the disease throughout the district, so far as could be ascertained from the reports of the School Attendance Officers and the enquiries of the Sanitary Inspectors.

Month	Withington	Didsbury	Chorlton-cum-Hardy	Burnage	Total
January	—	14	—	—	14
February	—	119	—	1	120
March	1	10	38	8	57
April	32	9	60	17	118
May	18	—	6	4	28
June	3	—	1	—	4
July	5	—	1	1	7
August	—	—	—	—	—
September	—	—	22	—	22
October	—	—	64	—	64
November	—	—	18	—	18
December	—	12	—	1	13
	59	164	210	32	465

The disease manifested itself mainly in the early months of the year. In January and February a considerable outbreak occurred in Didsbury in connection with the National and Beaver Road Schools. In March Chorlton became involved, Oswald Road School being the chief sufferer. Here the disease attained such dimensions in the following month that it was considered advisable to close the infants' department. St. Cuthbert's, Withington, was next attacked, but prompt closure of the school was effectual in staying the spread of the disease.

Both for Measles and Whooping Cough the Manchester procedure has been adopted, and found efficient.

The ages of attack were as follows:—

	0— 1 year	— 2 years	— 3 years	— 4 years	— 5 years	— 6 years	— 7 years	— 8 years	— 9 years	—10 years	—11 years	—12 years	—13 years	—14 years	— over
Total	13	20	23	52	69	97	76	40	35	19	12	5	2	—	2
Secondary Cases	5	10	7	11	9	6	11	5	—	—	—	—	—	—	—

Of the 14 deaths, 6 were of children under 1 year, 4 between the ages 1–5, and 4 of children over 5 years.

The case mortality for all ages is 3 per cent. For the first year of life it works out at 46·1 per cent., and for the first 5 years at 5·6 per cent.

Whooping Cough.—141 cases of this disease were reported during 1908. Their distribution is shown in the following table:—

	Withington (including Whalley Range)	Didsbury	Chorlton-cum-Hardy	Burnage	Total
January	15	6	—	—	21
February..	1	6	—	—	7
March	—	1	—	—	1
April	1	—	2	—	3
May..	9	—	20	—	29
June..	2	4	9	1	16
July..	2	—	10	—	12
August	1	3	2	—	6
September	1	—	3	—	4
October	4	—	4	—	8
November	12	—	2	—	14
December	18	—	2	—	20
	66	20	54	1	141

The Withington and Chorlton Townships were the chief sufferers, while the schools principally affected were St. Augustine's, Chorlton-cum-Hardy, in May and June, and the Manley Park School in November and December.

The age distribution of the cases was as follows :—

0— 1 year	— 2 years	— 3 years	— 4 years	— 5 years	— 6 years	— 7 years	— 8 years	— 9 years	—10 years	—11 years	—12 years	—13 years	—14 years
5	11	9	9	21	39	29	11	2	1	2	1	—	1

Of the 9 deaths recorded, 2 were under 1 year, 4 between 1 and 5 years, 2 between 5 and 15 years, and 1 between 15 and 25 years. The case mortality was 6·4.

Scarlet Fever.—The following table shows the number and distribution of cases of Scarlet Fever, together with the number of patients removed to hospital during 1908 :—

Month	Withington	Didsbury	Chorlton-cum-Hardy	Burnage	Total	Number removed to Hospital
January	2	3	4	—	9	3
February	3	2	—	—	5	3
March	2	—	—	—	2	2
April	3	1	1	—	5	4
May	10	—	1	—	11	10
June	—	4	2	—	6	4
July	3	2	—	—	5	4
August	3	4	3	—	10	6
September	5	1	2	—	8	5
October	15	—	4	2	21	10
November	6	1	2	—	9	7
December	2	—	1	—	3	2
	54	18	20	2	94	60

There was a considerable diminution in the number of notified cases as compared with the previous year.

A seasonal curve for the district, based on the number of cases occurring during the last 15 years, shows two crests—one in May, and one extending from September to January, but reaching a maximum in December, and two troughs, one in April and one in July.

Last year's curve of incidence differs slightly from this—the "winter" maximum occurring in October. This was due to a localised outbreak in Withington in connection with St. Paul's School.

The attack-rate for the whole district was 2·1 per thousand, as compared with 3·2 in 1907 and 2·9 in 1906.

None of the cases proved fatal, and the disease appeared to be of a mild type.

Diphtheria and Membranous Croup.—The following is the usual table relating to the distribution of this disease during the year :—

Month	Withington	Didsbury	Chorlton-cum-Hardy	Burnage	Totals	Number removed to Hospital
January	—	—	3	—	3	3
February	5	3	—	—	8	2
March	2	10	1	—	13	7
April	—	3	1	—	4	1
May	1	5	—	—	6	2
June	1	1	2	—	4	2
July	—	2	1	—	3	1
August	—	1	—	—	1	1
September	1	1	2	—	4	2
October	2	1	7	—	10	5
November	1	3	10	—	14	4
December	2	2	3	—	7	2
	15	32	30	—	77	32

During the months of October and November a small epidemic occurred in connection with St. Oswald's Road School, Chorlton-cum-Hardy. There were 13 cases in all—3 of which terminated fatally. As the first cases notified were confined to one class in the School, the attention of the School Medical Officer was drawn to the matter, and a swab was taken from the throat of each member of the class. One of the throats thus examined was that of D. C. On the 3rd December this child was reported as suffering from Nasal Diphtheria. Enquiry elicited the fact that she had been ill for about two months (during which time she regularly attended school) with what her parents regarded as a "persistent cold." Bacteriological examination of the nasal discharge revealed the presence of large numbers of Diphtheria bacilli, and there appears to be no doubt but that this case was the cause of the outbreak.

During the year 76 swabs were examined—23 with positive results, and 7 in which the result was doubtful. Of the total number of cases notified, 43 were examined bacteriologically. In 23 of these, Diphtheria bacilli were found.

The case mortality for the year was 6 per cent., as compared with *nil* in 1907 and 9 in 1906.

One hundred and seventy-three phials of Diphtheria Antitoxin were supplied free to the medical profession during the year. It is now possible to obtain the remedy at the various police stations, and practitioners have availed themselves freely of this facility.

The attack-rate for the whole district was 1·7 per thousand, compared with 0·6 in 1907, 0·6 in 1906, and 1·3 in 1905.

Enteric Fever.—Eight cases of this disease were reported during the year, three of which proved fatal. The average annual number of cases during the previous 10 years was 12.

Five of these yielded a positive Widal reaction.

The attack-rate for the whole district was 0·18 per 1,000, compared with 0·55 in 1907. The case mortality works out at 37·5 per cent.

Three of the eight cases were removed to Monsall Hospital and one to the Chorlton Union Hospital.

Erysipelas.—Eight cases of Erysipelas were notified during the year, none of which, however, terminated fatally. The usual enquiries were made in each case—particularly as to whether a monthly or district nurse was in attendance—and disinfection carried out where necessary.

Puerperal Fever.—The three cases which came to our knowledge were investigated by Dr. Merry Smith. Two were removed to Monsall Hospital. None of the cases ended fatally. In each case the bedding was stoved, and the usual precautions taken to prevent the nurses carrying infection.

Phthisis.—The same procedure is adopted as in the City with regard to cases of Phthisis, and the results of investigation are now incorporated with the records in the Central Office. A local record is, however, also kept, in which are embodied the main particulars respecting each case, and all disinfection and the supply of spittoons, etc., are provided for by this department.

During the year there were recorded 33 deaths from this disease. Disinfection was offered in all cases, and refused only in three. Forty-four specimens of sputum were examined, and a positive result obtained in 9.

The following table shows the number of cases in which rooms and bedding have been disinfected after Phthisis for each year since the practice was commenced (March 8th, 1900) :—

	1900	1901	1902	1903	1904	1905	1906	1907	1908
Fatal cases of Phthisis	38	26	27	38	29	20	35	39	33
Rooms of patients disinfected, paper stripped, walls washed down with one per cent. chloride of lime solution, and bedding stoved	11	20	20	30	24	24	37	89	104
Partial disinfection	3	1	4	1	2	3	4	14	—
Disinfection refused	24	5	3	7	7	—	1	1	—

The above figures relate to all patients suffering from Phthisis reported either as having died or as having removed to other premises.

Removal to Hospital.—The number of patients removed to hospital was as follows :—

Disease	Baguley Sanatorium	Monsall	Chorlton Union Workhouse	Ladywell Sanatorium
Diphtheria	32	—	—	—
Erysipelas	—	2	—	—
Scarlet Fever	59	—	—	1
Enteric Fever	—	4	—	—
Puerperal Fever	—	2	—	—
	91	8	—	1

The number of patients who have suffered from Scarlet Fever, Diphtheria, and Enteric Fever in the district in each of the years from 1895 to 1907, together with the annual number of removals to hospital, is shown in the following table :—

Year	Number of Cases of Fever in the District	Removed to Hospital	Percentage
1895	S.F. 102. D. 22. E. 20—Total 144	49	34
1896	S.F. 120. D. 13. E. 10— ,, 143	63	44
1897	S.F. 177. D. 16. E. 10— ,, 203	121	59
1898	S.F. 70. D. 22. E. 25— ,, 117	54	46
1899	S.F. 68. D. 16. E. 16— ,, 100	28	28
1900	S.F. 204. D. 14. E. 8— ,, 226	120	53
1901	S.F. 245. D. 31. E. 11— ,, 287	162	56
1902	S.F. 109. D. 26. E. 6— ,, 141	73	51
1903	S.F. 85. D. 31. E. 14— ,, 130	58	44
1904	S.F. 80. D. 28. E. 5— ,, 113	43	38
1905	S.F. 136. D. 50. E. 6— ,, 192	92	47
1906	S.F. 113. D. 64. E. 12— ,, 189	133	70
1907	S.F. 128. D. 24. E. 21— ,, 173	96	55
1908	S.F. 94. D. 77. E. 8— ,, 179	96	54

In the following report of the Inspector of Nuisances are recorded particulars of work carried out during the year.

Complaints received and attended to—265.

Notices served during the year for alteration of insanitary conditions—146.

	Notices	Premises concerned
Under Section 46 M.I. Act, 1845	3	3
,, ,, M. W. & I. Act, 1867 ..	49	43
,, ,, 22 P.H. Act, 1875	1	1
,, ,, 36 ,, ,, ,, ...	5	23
,, ,, 41 ,, ,, ,, ...	9	33
,, ,, 91 to 94 ,, ,, ...	2	2
,, Dairies and Cowsheds Orders ..	4	4
Town Clerk Notices	73	130
	146	239

Notices to enter premises under Section 41 P. H. Act, 1875—32.

Insanitary premises altered without notice—72.

Accumulations of manure, etc., removed—8.

Premises overcrowded—1.

Removal of animals—3.

Premises inspected as to their sanitary condition after the notification of cases of infectious fever, including Phthisis—193.

Premises visited *re* disinfection after deaths from Cancer—35.

Premises visited *re* particulars for report after deaths from Zymotic Enteritis—7.

Disinfection.—The total number of articles stoved in 1908 was 5,736, and consisted of the following:—Beds, 245; mattresses, 261; pillows, 739; blankets, 679; carpets, 429; clothes, 1,821; counterpanes, 293; sundries, 1,269.

Premises disinfected after fevers, including Phthisis and Cancer—217 houses, 435 rooms.

Drainage and Sanitary Alterations.

Old drains and sanitary fittings of premises, smoke tested—9.

Old drains and sanitary fittings of premises, water tested—1.

The above tests were applied by request, and the cost charged to the applicants.

During the year 527 tests of drains, water-closets, and soil pipes were made with the water test in connection with sanitary alterations; 77 premises were redrained throughout, and tested with the Hydraulic Test (65 under notice and 12 without notice):—

Details of Work done	Under notice	Without notice	Total
Defective water-closets replaced by new ones ..	31	20	51
New soil pipes of heavy cast iron	32	10	42
New ventilating shafts provided to soil pipes and at head of drains	46	16	62
Manholes, with approved disconnecting traps ..	—	3	3
Disconnecting traps, without manholes	2	2	4
Privies dismantled and sites made good	120	6	126
Ashpits..	98	13	111
Water-closets substituted for privies	70	2	72
Galvanised-iron dustbins provided	*185	20	205
Cellar floors: flagged, concreted, or repaired ..	11	5	16
Yards or scullery floors: flagged, concreted, or repaired	42	—	42
Waste pipes or rain-water pipes: trapped, renewed, or repaired	22	20	42
Stopped drains cleared	6	8	14
Old cesspool rebuilt	1	—	1

* 56 supplied by default and cost recovered from owners.

Dairies, Cowsheds, and Milkshops.—During the year, 248 visits have been made to cowsheds and milkshops. One new cowshed has been erected at Chorlton-cum-Hardy with accommodation for 13 cows. One dairy has been provided with means for light and ventilation, and the floor concreted. Four notices have been served under the Dairies and Cowsheds Orders, one respecting a milkshop at Chorlton-cum-Hardy has been cancelled upon the occupier arranging to remove into new premises in course of erection.

One cowkeeper and seventeen purveyors of milk have been registered during 1908.

Registered milksellers in the district—153. Registered cowkeepers—37. Cowsheds—83. Milkshops—70.

Slaughter-houses.—The four slaughter-houses in use in the district are conducted in a satisfactory manner, and have had 34 visits of inspection during the year.

Reports made to the Medical Officer—225. Reports made to the Surveyor—18. Letters written for the abatement of nuisances, etc.—116.

Building in the district during 1907.—The total number of houses certified as fit for habitation during the year ending December 31st, 1908, was 532, distributed as follows:—Withington (including Whalley Range), 319; Didsbury, 58; Chorlton-cum-Hardy, 112; and Burnage, 43. In all these the drains and other sanitary arrangements have been tested by the Inspector of New Buildings.

Withington is being extended chiefly in the direction of Moss Side. The increase of building in Burnage is mainly due to the operations of the Manchester Tenants Limited, a Society following similar methods to those pursued by the Garden City Tenants Limited and other kindred organisations

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Report on the Administration of the Factory and Workshop Act, 1901, in so far as this Administration is in the hands of the Withington Committee, and is concerned with matters in the Department of the District Medical Officer of Health.

1.—*Workshops.*

The number of workshops now on the register is 579.

The cubic capacity of each workshop has been measured, and cards have been placed in each room showing the maximum number of workpeople allowed.

Attention has been given to the cleanliness and ventilation of the workshops.

In 78 cases the walls and ceilings of the workshops were found to be in a dirty condition, and verbal instructions were given by the Inspector to have the premises cleansed.

This request has, in each instance, been sufficient to cause the premises to be cleansed without legal notice.

In 14 workshops the sanitary accommodation was found to be unsatisfactory, and was reported by the Inspector to the Medical Officer of Health. In 4 instances there was no accommodation for the workmen. The owners of the premises have been served with a notice to provide sanitary accommodation.

In one case certain defects existing in the closet were made good after a legal notice had been served.

In the nine remaining cases certain defects existing in the closets were made good after verbal instructions being given, and legal notices have not been necessary.

In two instances overcrowding of the workshop was found, but the nuisance has been abated at once upon verbal instructions being given, fresh accommodation having been found.

2.—*Bakehouses.*

There are now on the register 40 bakehouses, which, on the whole, are kept in a clean and satisfactory condition. In 42 instances during the year it has been found necessary to call the attention of the occupiers to the state of the walls, etc., and to request them to have them cleansed. In all cases this has been done without legal notice.

All the bakehouses comply with the Act in not having any sanitary convenience or ashpit communicating directly with them; in not having any cistern for supplying water to them connected in any way with a water-closet; in having no drain openings inside; and in having no sleeping place connected with them.

The bakehouses are distributed over the district as follows:—

Chorlton-cum-Hardy	20
Withington	14
Didsbury	5
Burnage	1
	40

There are no cellar-bakehouses in the district.

3.—*Homework.*

Information with regard to persons in the district taking in homework from places of business outside the district has been received in 17 instances during the year. These premises have been inspected and registered, as in the case of other workshops. The number of visits paid during the year to premises in which homework has been carried on is 101. No infectious fevers have been notified during the year as occurring in connection with the premises occupied by homeworkers.

In three instances employers living in this district have been reported as giving out work to homeworkers who live in other districts. The names and addresses of these homeworkers have been sent to the sanitary authorities of the districts in which they live.

4.—*Workplaces.*

Under this heading the following are classified :—

New buildings in course of erection, 67 ; fish and game shops, 13 ; Cab-yards and stables, 11 ; slaughter-houses, 4—total 95.

In the case of new buildings, it was found that in 12 instances no sanitary accommodation existed for the workmen. A verbal request was sufficient to have satisfactory accommodation provided. In three instances the accommodation provided for the men was found to be unsatisfactory, but upon a verbal request being made the necessary alterations were carried out.

Total number of visits to workplaces during the year, 301.

5.—*Factories.*

There are 23 places in the Withington district in which mechanical power is used.

These are as follows :—

Laundries, 6 ; printers, 3 ; bootmakers, 2 ; joiners, 2 ; cycle makers, 2 ; motor garage, 2 ; bottling store, 1 ; brickworkers, 2 ; saw mill, 1 ; blacksmith, 1 ; and mechanics, 1. Total number of visits to factories during the year, 63.

Workshops.

Number of visits	Number in which Sanitary defects were found and reported to the Medical Officer of Health	Number of reports referred to Factory Inspector (unregistered workshops)	Number of cases in which Magisterial proceedings have been taken	Number registered during the year	Total number on register	Number of visits to houses where out-workers are employed	Factories and Workshops not provided with proper means of escape in case of fire
3345	17	6	0	40	579	101	0

Bakehouses.

Number of visits	Number in which Sanitary defects were found	Number of reports referred to Factory Inspector	Number of cases in which Magisterial proceedings have been taken	Number registered during the year	Total number on register
375	5	0	0	6	40

1.—Inspection.

Premises	Number of		
	Inspections	Written Notices	Prosecutions
Factories...	63	0	0
Workshops	2880	5	0
Workplaces	301	0	0
Homeworkers' Premises	101	0	0
Total	3345	5	0

2.—Defects Found.

Particulars	Number of Defects			No. of Prosecutions
	Found	Remedied	Referred to H.M. Inspector	
Nuisances under the Public Health Acts :—				
Want of cleanliness	120	120	0	0
Want of ventilation	2	2	0	0
Overcrowding	2	2	0	0
Sanitary Accommodation (Section 22 adopted)				
Insufficient	7	4	0	0
Defective	12	12	0	0
Not separate for Sexes...	0	0	0	0
Offences under the Factory and Workshop Act	0	0	0	0
	143	140	0	0

3.—Other Matters.

Class	Number
Matters notified to H.M. Inspectors of Factories :—	
Failure to affix abstract of the Factory and Workshop Act (S. 133)	6
Action taken in matters referred by H.M. Inspectors as remediable under the Public Health Acts but not under the Factory Act (S. 5)—	
Notified by H.M. Inspector	0
Reports (of action taken) sent to H.M. Inspectors.	0
Other	0
Underground Bakehouses (S. 101) :—	
In use during 1903	8
Certificate granted in 1907	0
Certificate granted in 1908	0
In use at the end of 1908	0

Homework :—	Number of Lists	Number of Outworkers
List of Outworkers (S. 107) :—		
Lists received	2	0
Addresses of outworkers forwarded to other authorities		6
Addresses of outworkers received from other authorities		17

	Wearing Apparel	Other
Homework in unwholesome or infected premises :—		
Notices prohibiting homework in unwholesome premises (S. 108)	0	0
Cases of infectious disease notified in homeworker's premises	0	0
Orders prohibiting homework in infected premises (S. 110)	0	0

Workshops on the Register (S. 131) at the end of 1907 :—	
Dressmaking	134
Bootmakers	67
Joiners	35
Plumbers	25
Blacksmiths and Wheelwrights	16
Decorators	17
Millinery	44
Ironmongers	15
Cabinetmakers	15
Tailors	22
Bakers	40
Laundries	13
Hairdressers	13
Monumental Masons	3
Saddlers	4
Printers	3
Watchmakers	1
Picture Framing	1
Knitting	2
Cycles and Motor Garage	8
Bottling Stores	2
Brickworks	2
Workplaces	95
Saw Mill	1
Mechanics	1
Total number of Workshops on Register	579

TABLES.

TABLE A.—MANCHESTER, 1908.

CAUSES OF DEATH AT DIFFERENT LIFE PERIODS IN THE 52 WEEKS OF THE YEAR.

PERSONS.—(MALES AND FEMALES.)

CAUSES OF DEATH	Ages at Death													
	All Ages	Under 5 Years		5 to 10	10 to 15	15 to 20	20 to 25	25 to 35	35 to 45	45 to 55	55 to 65	65 to 75	75 to 85	85 and upwards
		0 to 1	1 to 5											
All Causes	11930	2903	1606	280	166	199	263	645	1086	1244	1468	1296	666	108
A.—General Diseases	4666	1372	882	166	72	97	131	334	487	425	414	223	59	4
B.—Local Diseases	5969	953	623	75	77	93	117	278	534	749	991	941	470	68
C.—Other Specified Dis:	9	4	...	1	...	...	1	1	...	2	...	...	...	...
D.—Ill-defined Diseases	816	477	42	1	...	...	1	...	1	2	14	109	133	36
E.—Violent Deaths	470	97	59	37	17	9	13	32	64	66	49	23	4	...
A.—General Diseases.														
Smallpox.. Vaccinated	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Smallpox.. Not Vaccinated	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Smallpox.. No Statement	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cowpox	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Chickenpox	5	4	1	...	...	...	...	...	...	...	...	...	...	...
Measles	366	79	265	21	1	...	...	...	...	...	...	...	...	...
Epidemic Rose Rash	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Scarlet Fever..	92	5	54	20	5	2	2	1	3	...	...	...	...	...
Typhus	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Plague	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Relapsing Fever	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Influenza	132	2	5	1	...	2	1	12	17	18	41	23	10	...
Whooping Cough	220	89	125	6	...	...	...	...	...	...	...	...	...	...
Mumps	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Diphtheria and Memb: Croup	123	11	78	27	4	1	1	...	1	...	...	...	...	...
Cerebro-spinal Fever	6	...	...	2	...	4	...	...	...	...	...	...	...	...
Simple Cont: Fever	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Enteric Fever	75	...	4	1	4	6	8	21	20	5	6	...	...	...
Asiatic Cholera	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Epidemic Diarrhœa	495	389	100	...	...	...	1	...	...	1	...	4	...	...
Diarrhœa	90	66	16	1	...	...	...	...	...	...	...	5	2	...
Dysentery	6	1	3	...	...	...	...	...	...	1	1	...	...	...
Malarial Fever	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hydrophobia	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Glanders	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Anthrax	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Tetanus	2	2	...	...	...	...	...	...	...	...	...	...	...	...
Syphilis	25	22	...	...	...	...	1	...	2	...	...	...	...	...
Gonorrhœa, Strict: Urethra	13	...	...	...	...	...	...	...	4	2	7	...	...	...
Puerperal.. Septicæmia	14	...	...	...	...	...	6	3	5	...	...	...	...	...
Puerperal.. Pyæmia	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Puerperal.. Phlegmasia Dol:	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Puerperal.. *Fever*	8	...	...	...	...	...	1	6	1	...	...	...	...	...
Infective Endocarditis	11	...	...	1	3	2	1	2	1	1	...	...	...	...
Epidemic Pneumonia / Pneumonic Fever	4	...	...	...	...	...	...	2	...	1	1	...	...	...
Erysipelas	22	4	...	...	...	...	1	1	6	3	2	3	1	1
Septicæmia (not puerp:)	16	1	1	1	...	...	1	4	2	2	2	1	1	...
Pyæmia (not puerp:)	7	3	1	...	...	1	...	...	1	...	1	...	...	...
Phlegmon	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Phagedæna	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Other Septic Diseases	18	4	3	2	...	...	1	1	...	3	1	3	...	...
Tubercular Phthisis	1041	8	22	21	22	55	85	231	281	191	93	31	1	...
Phthisis	47	...	1	1	...	3	5	7	14	9	5	2	...	...

TABLE A, 1908—*continued.*

CAUSES OF DEATH	Ages at Death													
	All Ages	Under 5 Years		5 to 10	10 to 15	15 to 20	20 to 25	25 to 35	35 to 45	45 to 55	55 to 65	65 to 75	75 to 85	85 and upwards
		0 to 1	1 to 5											
A.—General Diseases— *continued*														
Tubercular Meningitis	172	42	83	27	11	2	1	3	2	...	1	...	...	...
Tubercular Peritonitis	56	21	17	9	4	...	3	...	1	...	1	...	...	...
Tabes Mesenterica	22	8	11	2	...	...	...	1	...	...	...	...	...	...
Lupus	3	...	...	...	...	...	...	1	2	...	...	...	...	...
Tubercle of other organs	43	8	10	1	4	4	1	3	6	3	3	...	...	...
General Tuberculosis	93	22	28	12	8	3	3	3	4	4	6	...	...	...
Scrofula	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Parasitic Diseases	3	...	...	...	...	...	1	...	2	...	...	...	...	...
Starvation	1	1	...	...	...	...	...	...	...	...	...	...	...	...
Scurvy	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Alcoholism, Delirium Tremens	34	...	...	...	...	...	...	2	9	13	8	2	...	...
Opium, Morphia Habit	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ptomaine Poisoning	2	...	...	1	...	1	...	...	...	...	...	...	...	...
Industrial Poisoning — Lead	2	...	...	...	...	...	...	...	1	1	...	...	...	...
Industrial Poisoning — Phosphorus	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Industrial Poisoning — Arsenic, &c.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Rheum: Fever, Acute Rheum:	24	1	1	2	5	4	3	2	2	2	2	...	...	...
Rheumatism of Heart	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Chronic Rheumatism	30	...	...	1	...	1	...	2	2	3	11	6	4	...
Rheum: Arthritis, Rheum: Gout	16	...	...	...	...	...	...	2	1	1	3	7	2	...
Gout	5	...	...	...	...	...	...	...	1	2	1	1	...	...
Carcinoma	445	...	...	...	...	1	...	10	69	115	143	83	22	2
Sarcoma	51	...	1	...	...	3	1	7	12	7	9	7	3	1
"*Cancer*," Malignant Disease	88	...	...	...	...	...	...	2	5	14	36	26	5	...
Rickets	38	11	26	1	...	...	...	...	...	...	...	...	...	...
Purpura	4	...	1	1	...	...	...	...	...	...	2	...	...	...
Hæmophilia, Hæm: Diathesis	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Anæmia, Leucocythæmia	40	2	1	2	...	1	2	2	3	13	8	5	1	...
Diabetes Mellitus	63	...	...	...	1	1	1	3	7	10	19	14	7	...
Premature Birth	422	422	...	...	...	...	...	...	...	...	...	...	...	...
Congenital Defects	78	73	2	2	...	...	...	...	...	...	1	...	...	...
Injury at Birth	8	8	...	...	...	...	...	...	...	...	...	...	...	...
Atelectasis	37	36	1	...	...	...	...	...	...	...	...	...	...	...
Want of Breast Milk	4	4	...	...	...	...	...	...	...	...	...	...	...	...
Teething	44	23	21	...	...	...	...	...	...	...	...	...	...	...
B.—Local Diseases.														
1.—Nervous System.														
Inflammation of Brain	110	33	41	9	4	5	2	6	6	3	1	...	...	...
Softening of Brain	29	...	...	...	...	...	...	...	2	3	9	11	4	...
General Paraly: of Insane	48	...	...	...	...	...	2	6	17	15	6	2	...	...
Insanity (not puerperal)	144	1	...	2	1	1	3	13	13	28	29	38	13	2
Chorea	2	...	...	...	...	1	...	...	...	...	...	1	...	...
Epilepsy	31	...	...	1	2	4	2	4	6	4	3	2	3	...
Convulsions	135	108	26	1	...	...	...	...	...	...	...	...	...	...
Laryngismus Stridulus	17	5	9	2	...	...	...	...	...	1	...	...	...	...
Locomotor Ataxy	15	...	...	...	...	...	...	...	5	4	3	2	1	...
Dis: of Spinal Cord	44	...	...	1	...	2	...	4	3	13	9	9	3	...
Neuritis	17	...	...	...	...	...	...	3	3	7	4	...	...	...
Brain Tumour	18	...	...	1	4	1	3	3	4	...	1	1	...	...
Nervous System (other Dis:)	20	1	1	1	...	1	...	1	2	1	2	8	1	1
Diseases of Special Sense Organs.														
Otitis, Mastoid Disease	24	5	5	1	3	3	2	4	1	...	...	...	...	...
Epistaxis, Nose Disease	2	...	...	...	...	...	...	...	...	...	1	...	1	...
Ophthalmia, Eye Disease	1	1	...	...	...	...	...	...	...	...	...	...	..	..

TABLE A, 1908—*continued.*

CAUSES OF DEATH	Ages at Death													
	All Ages	Under 5 Years		5 to 10	10 to 15	15 to 20	20 to 25	25 to 35	35 to 45	45 to 55	55 to 65	65 to 75	75 to 85	85 and upwards
		0 to 1	1 to 5											
3. Diseases of Heart.														
Valvular Dis: Endocarditis	309	1	4	2	15	8	16	28	45	64	65	48	12	1
Pericarditis	13	...	...	1	5	2	...	...	1	1	2	1	...	...
Hypertrophy of Heart.....	2	...	...	...	...	...	...	...	...	...	1	...	1	...
Angina Pectoris	13	...	...	...	...	...	...	1	1	2	8	1	...	...
Dilatation of Heart	99	...	...	...	...	...	3	4	9	8	36	25	12	2
Fatty Degen: of Heart	26	...	...	...	...	...	1	2	4	3	8	7	1	...
Syncope, Heart Disease.....	657	5	...	3	9	10	13	20	55	91	147	172	112	20
4. Dis: of Blood Vessels.	1119													
Cerebral Hæmorrhage.....	372	2	...	...	...	2	1	8	21	64	108	103	60	3
Apoplexy, Hemiplegia.....	98	...	...	...	...	...	...	...	10	22	28	24	14	...
Aneurism	20	...	...	...	...	...	...	2	5	5	3	4	1	...
Senile Gangrene	17	...	...	...	...	...	...	...	...	...	3	7	4	3
Embolism, Thrombosis	11	...	...	...	1	...	2	2	4	2	...	...	...	...
Phlebitis.....	3	...	...	...	...	...	...	1	...	1	1	...	...	...
Varicose Veins	1	...	...	...	...	...	...	...	1	...	...	...	...	...
Blood Vessels (Other Diseases)	21	...	1	...	...	...	...	...	1	3	5	7	3	1
5. Dis: of Respiratory Sys:														
Laryngitis	28	4	18	3	...	...	...	...	2	1	...	...	...	...
Memb: Laryng: (Not Diphth:)	1	...	1	...	...	...	...	...	...	...	...	...	...	...
Croup.....	5	1	4	...	...	...	...	...	...	...	...	...	...	...
Larynx (Other Dis:)	3	...	1	...	...	...	...	...	...	1	1	...	...	...
Bronchitis	1,150	225	94	3	...	2	4	15	61	116	211	256	136	27
Pneumonia { Lobar.....	424	25	30	6	4	13	23	52	75	69	61	49	16	1
Pneumonia { Broncho.....	702	247	292	11	5	5	4	5	21	28	36	31	17	...
"*Pneumonia*".....	167	24	28	5	5	9	7	9	27	21	13	14	3	2
Emphysema, Asthma	20	...	...	...	...	...	...	1	1	8	7	1	2	...
Pleurisy	34	1	3	...	...	1	2	5	7	4	6	1	4	...
Fibroid Disease of Lung.....	2	1	...	...	...	...	...	1	...	...	...	...	...	...
Respiratory Dis: (Other)	43	8	6	...	...	...	...	...	2	8	6	6	6	1
6. Dis: of Digestive Sys:														
Tonsillitis, Quinsy	4	1	1	...	1	...	...	...	...	...	...	...	1	...
Mouth, Pharynx	13	7	3	...	...	...	...	2	...	...	1	...	...	...
Gastric Ulcer.....	30	1	1	...	...	...	3	7	7	5	5	...	1	...
Gastric Catarrh.....	25	21	2	...	...	...	...	...	...	...	...	...	2	...
Stomach (Other Dis:).....	42	24	...	...	1	...	1	3	...	3	5	4	1	...
Enteritis.....	107	80	16	2	...	1	1	...	...	4	1	...	2	...
Gastro-Enteritis.....	59	42	8	...	...	....	1	...	1	3	1	2	1	...
Appendicitis, Perityph :	43	...	3	8	7	10	3	8	3	...	1	...	...	...
Hernia	18	1	...	...	...	...	...	1	...	4	8	3	1	...
Intestinal Obstruct:.....	32	2	1	...	...	2	1	3	3	4	5	9	2	...
Other Diseases of Intestines ...	22	7	2	1	...	...	2	2	4	2	1	...	1	...
Peritonitis	26	4	5	1	1	1	...	3	5	4	1	...	1	...
Cirrhosis of Liver.....	82	...	...	1	...	...	...	4	17	26	27	5	2	...
Liver and Gall Bladder (O. D.).	44	17	...	1	1	...	...	4	4	5	2	8	2	...
Digestive System (Other Dis:)...	28	23	...	...	...	...	1	1	...	1	2	...	...	...
7. Dis: of Lymphatic and Ductless Glands.														
Spleen, Disease of.....	3	1	...	...	...	...	...	...	...	...	2	...	...	...
Lymphat: Syst: (Other Dis:)...	13	1	2	2	2	1	...	2	...	...	2	...	1	...
Thyroid Body (Other Dis:) ...	7	...	...	...	1	...	1	1	...	2	2	...	...	...
Supra Renal Caps: (Dis: of)...	1	...	...	...	...	...	...	...	...	...	...	...	1	...
8. Diseases of Urinary System.														
Nephritis Ac:, Uræmia	94	4	11	3	2	3	5	11	19	15	15	6	...	...
Ch: Bright's Dis: Albumin: ...	236	...	2	1	1	3	2	12	33	55	64	49	13	1
Calculus	3	...	...	...	...	...	...	...	2	1	...	...	...	...
Bladder and Prostate Dis: ...	32	...	...	...	...	...	...	...	3	2	9	13	3	2
Urinary Syst: (Other Dis:) ...	22	1	...	...	...	...	...	...	1	4	6	6	3	1

TABLE A, 1908—*concluded.*

CAUSES OF DEATH	Ages at Death													
	All Ages	Under 5 Years		5 to 10	10 to 15	15 to 20	20 to 25	25 to 35	35 to 45	45 to 55	55 to 65	65 to 75	75 to 85	85 and upwards
		0 to 1	1 to 5											
9. Diseases of Generative System.														
Ovarian Tumour	6	...	...	...	...	...	...	...	1	4	...	...	1	...
Other Dis : of Ovary	...	...	...	...	...	...	...	...	...	...		...	...	...
Uterine Tumour	2	...	...	...	...	...	...	...	2	...	...	...	...	...
Other Dis: of Uterus and Vagina	1	...	...	...	...	...	...	...	1	...	...	...	...	...
Disord : of Menstruation	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Gener: and Mam: Orgs: (other)	4	1	1	...	...	...	...	...	2	...	...	...	...	...
10. Diseases of Pregnancy and Childbirth.														
Abortion, Miscarriage	2	...	...	...	...	...	...	1	1	...	...	...	...	...
Puerperal Mania	1	...	...	...	...	...	...	1	...	...	...	...	...	...
Puerperal Convulsions	4	...	...	...	...	...	2	1	1	...	...	...	...	...
Placenta Prævi: Flooding	11	...	...	...	...	...	...	8	2	1	...	...	...	...
Other Ac: of Preg: & Childbirth	7	...	...	...	...	...	2	2	3	...	...	...	...	...
11. Diseases of Locomotor System.														
Caries, Necrosis	12	1	...	...	2	1	2	1	2	1	1	1	...	...
Arthritis, Periostitis	2	...	...	...	...	...	...	...	1	...	...	...	1	...
Locomotor Sys : (Other)	7	1	...	2	...	...	...	...	...	...	2	2	...	...
12. Diseases of the Skin.														
Ulcer, Bedsore	6	...	...	...	...	...	...	...	1	2	2	1	...	...
Eczema	7	6	...	...	...	...	...	...	...	...	...	1	...	..
Pemphigus	7	5	1	...	...	...	...	...	...	...	1	...	...	...
Skin Diseases (other)	6	4	...	...	...	1	...	...	...	...	1	...	...	...
C.—Other Specified Diseases	9	4	...	1	...	...	1	1	...	2	...	...	...	...
D.—Ill-defined and not Specified Diseases.														
Atrophy, Debility	521	452	38	...	...	...	...	...	...	1	1	11	12	6
Old Age	261	...	...	...	...	...	...	...	...	1	12	97	121	30
Dropsy, Ascites, Anasarca	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Tumour	2	1	...	1	...	...	...	...	...	...	...	...	...	...
Abscess	7	3	2	...	...	...	1	...	...	...	1	...	...	...
Hæmorrhage	1	1	...	...	...	...	...	...	...	...	...	...	...	...
Sudden (cause unascertained)	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Other Ill-defined	24	20	2	...	...	...	...	...	1	...	...	1	...	...
E.—Violent Deaths.														
1. Accident.														
In Mines and Quarries	1	...	1	...	...	...	...	...	...	...	...	1	...	...
By Vehicles: On Railways	21	...	2	...	1	2	2	6	2	5	2	...	...	...
By Vehicles: In Streets	24	1	...	7	2	1	1	1	...	2	2	4	1	...
Ships, Boats, Docks (not Drowning)	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Building Operations	...	...	...	...	...	...	...	...		...	...	...	...	...
Machinery	11	...	...	...	...	1	...	3	5	1	1	...	...	...
Weapons and Implements	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Burns and Scalds	87	4	40	24	4	...	...	2	2	5	5	1	...	...
Poison, Poisonous Vapours	16	1	...	3	...	...	1	1	5	3	2	...	...	...
Drowning	47	...	4	1	9	3	1	1	12	13	3	...	...	...
Suffocation	94	88	4	...	...	...	...	...	...	2	...	...	...	...
Falls	76	1	4	1	1	...	1	5	12	16	20	12	3	...
Weather Agencies	3	...	1	...	...	...	1	...	...	...	..	1	...	...
Otherwise or not Stated	24	1	1	1	...	...	2	1	6	5	6	1	...	...
2. Homicide.	4	1	2	...	...	...	...	...	1	...	...	...	...	...
3. Suicide.	61	...	...	..	...	2	4	12	18	14	8	3	...	...
4. Execution.	1	...	...	...	...	...	...	...	1	...	...	...	...	...

TABLE B.—MANCHESTER, 1908.

Causes of Deaths at Different Life Periods—MALES.

Classes	CAUSES OF DEATH	All Ages Total	Ages at Death—in years: Under 5 Years 0 to 1	Under 5 Years 1 to 5	5 to 10	10 to 15	15 to 20	20 to 25	25 to 35	35 to 45	45 to 55	55 to 65	65 to 75	75 to 85	85 and upwards
	All Causes	6281	1652	833	140	71	107	138	343	606	695	792	610	263	31
	Smallpox	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Measles	200	45	143	12	...	...	...	...	...	...	...	...	...	...
	Scarlet Fever	48	4	28	12	2	1	1	...	...	...	...	...	...	...
	Typhus Fever	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Whooping Cough	97	41	53	3	...	...	...	...	...	...	...	...	...	...
	Diphtheria, Memb: Croup	51	4	35	12	...	...	...	...	...	...	...	...	...	...
	Ill-defined Fever	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Enteric Fever	50	...	2	1	3	5	6	16	11	3	3	...	...	...
	Influenza	61	2	...	...	...	1	...	10	10	13	18	4	3	...
	Epidemic Diarrhœa	275	214	57	...	...	...	1	...	...	...	...	3	...	...
	Diarrhœa, Dysen., Simple Chol.	50	35	11	...	...	...	...	...	...	...	1	2	1	...
	Venereal Affections	25	11	...	...	...	...	...	...	5	2	7	...	...	...
	Erysipelas	10	3	...	...	...	...	1	...	3	1	...	2	...	...
	Pyæmia, Septicæmia	23	4	2	3	...	1	...	1	1	4	3	3	1	...
	Puerperal Fever	...	...	...	...	...	...	...	...	...	...	...	...	...	...
A	Other Zymotics	12	1	...	2	...	3	...	2	1	2	1	...	...	...
	Tuberc. Periton: Tabes Mes:	46	21	13	7	3	...	1	1	...	...	...	...	...	...
	Tubercular Meningitis	84	28	38	9	5	2	...	1	...	...	1	...	...	...
	Phthisis	661	5	14	14	8	29	52	130	179	136	72	22	...	...
	Tuberculous Dis. (other)	83	18	27	5	7	3	1	5	6	5	6	...	...	...
	Parasitic Diseases	...	...	...	...	..	...	...	...	...	...	...	...	...	...
	Alcoholism	21	...	...	...	...	...	...	1	6	9	3	2	...	...
	Rheumatic Fever	11	1	...	1	3	...	2	1	1	1	1	...	...	...
	Cancer	267	...	...	...	...	...	1	7	37	69	87	54	11	1
	Premature Birth	224	224	...	...	...	...	...	...	...	...	...	...	...	...
	Congenital Defects	60	57	...	2	...	...	...	...	...	...	1	...	...	...
	Epilepsy	13	...	...	...	...	2	1	1	5	1	2	...	1	...
	Convulsions	81	70	10	1	...	...	...	...	...	...	...	...	...	...
	Nervous Syst: (other)	247	23	34	10	2	4	5	12	36	39	38	32	11	1
	Cereb: Haem: Apoplexy, Hemip:	203	1	...	...	...	1	...	3	13	36	67	55	27	...
	Heart and Blood Vessel Dis:	546	4	1	4	11	10	14	25	58	88	146	118	58	9
	Croup	1	...	1	...	...	...	...	...	...	...	...	...	...	...
B and C	Bronchitis	554	128	43	1	...	1	4	9	32	59	92	130	48	7
	Pneumonia	764	175	198	10	6	19	22	44	82	73	69	45	19	2
	Respiratory Dis: (other)	83	10	15	1	...	1	2	5	8	12	16	5	8	...
	Digestive Syst: (other)	302	133	22	9	5	7	5	20	20	33	30	14	4	...
	Urinary Syst: (other)	235	2	4	3	2	5	4	12	34	45	58	51	13	2
	Generative Organs	1	1	...	...	...	...	...	...	...	...	...	...	...	...
	Other specified Diseases	176	44	36	5	2	4	3	9	8	17	30	13	5	...
D	Marasmus and Atrophy	313	286	15	...	...	...	...	...	...	...	1	5	5	1
	Old Age	100	...	...	...	...	...	...	...	...	...	5	39	48	8
	Other Ill-defined Causes	20	14	2	...	...	...	1	...	1	.	1	1	...	...
										1	Execution				
E	Violence	232	43	28	13	12	7	7	18	33	36	27	7	...	...
	Homicide	1	...	1	...	...	...	...	...	...	...	...	...	...	...
	Suicide	50	...	...	...	...	1	4	10	15	11	6	3	...	...

TABLE C.—MANCHESTER, 1908.

Causes of Deaths at Different Life Periods—FEMALES.

Classes	CAUSES OF DEATH	All Ages Total	Ages at Death—in years: Under 5 Years 0 to 1	Under 5 Years 1 to 5	5 to 10	10 to 15	15 to 20	20 to 25	25 to 35	35 to 45	45 to 55	55 to 65	65 to 75	75 to 85	85 and upwards
	All Causes	5649	1251	773	140	95	92	125	302	480	549	676	686	403	77
	Smallpox	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Measles	166	34	122	9	1	...	...	...	...	...	...	...	...	...
	Scarlet Fever	44	1	26	8	3	1	1	1	3	...	...	...	...	...
	Typhus Fever	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Whooping Cough	123	48	72	3	...	...	...	...	...	...	...	...	...	...
	Diphtheria, Memb: Croup	72	7	43	15	4	1	1	...	1	...	...	...	...	...
	Ill-defined Fever	...	...	...	...	...	...	...	...	...	...	...	...	...	..
	Enteric Fever	25	...	2	...	1	1	2	5	9	2	3	...	...	...
	Influenza	71	...	5	1	...	1	1	2	7	5	23	19	7	...
	Epidemic Diarrhœa	220	175	43	...	...	...	...	...	...	1	...	1	...	...
	Diarrhœa, Dysentery, Simple Cholera	46	32	8	1	...	...	...	...	...	1	...	3	1	...
	Venereal Affections	13	11	...	...	...	...	1	...	1	...	...	...	...	...
	Erysipelas	12	1	...	...	...	...	...	1	3	2	2	1	1	1
	Pyæmia, Septicæmia	18	4	3	...	...	...	2	4	2	1	1	1	...	...
A	Puerperal Fever	22	...	...	...	...	...	7	9	6	...	...	...	...	...
	Other Zymotics	16	5	1	1	3	3	1	2	...	...	...	...	...	...
	Tubercular Periton : Tabes Mes.	32	8	15	4	1	...	2	...	1	...	1	...	...	...
	Tubercular Meningitis	88	14	45	18	6	...	1	2	2	...	...	...	...	...
	Phthisis	427	3	9	8	14	29	38	108	116	64	26	11	1	...
	Tuberculous Diseases (other)	56	12	11	8	5	4	3	2	6	2	3	...	...	...
	Parasitic Diseases	3	...	...	...	...	...	1	...	2	...	...	...	...	...
	Alcoholism	13	...	...	...	...	...	...	1	3	4	5	...	...	...
	Rheumatic Fever	13	...	1	1	2	4	1	1	1	1	1	...	...	...
	Cancer	317	...	1	...	...	4	...	12	49	67	101	62	19	2
	Premature Birth	198	198	...	...	...	...	...	...	...	...	...	...	...	...
	Congenital defects	55	52	3	...	...	...	...	...	...	...	...	...	...	...
	Epilepsy	18	...	...	1	2	2	1	3	1	3	1	2	2	...
	Convulsions	54	38	16	...	...	...	...	...	...	...	...	...	...	...
	Nervous System (other)	217	17	17	6	7	7	5	24	19	36	26	40	11	2
	Cerebral Hemorrhage, Apoplexy, and Hemiplegia	267	1	...	...	...	1	1	5	18	50	69	72	47	3
	Heart and Blood Vessel Diseases	646	2	4	2	19	10	21	35	68	92	133	154	88	18
B and C	Croup	4	1	3	...	...	...	...	...	...	...	...	...	...	...
	Bronchitis	596	97	51	2	...	1	...	6	29	57	119	126	88	20
	Pneumonia	529	121	152	12	8	8	12	22	41	45	41	49	17	1
	Respiratory Diseases (other)	48	4	14	2	...	...	...	2	4	10	4	3	4	1
	Digestive System (other)	273	97	20	5	6	7	8	18	24	28	30	17	13	...
	Urinary System (other)	152	3	9	1	1	1	3	11	24	32	36	23	6	2
	Generative Organs and Childbirth	37	...	1	...	...	...	4	13	13	5	...	...	1	...
	Other specified Diseases	188	34	21	7	7	6	6	9	12	20	28	25	13	...
D	Marasmus and Atrophy	208	166	23	...	...	...	...	...	...	1	...	6	7	5
D	Old Age	161	...	...	...	...	...	...	...	...	1	7	58	73	22
D	Other Ill-defined Causes	14	11	2	1	...	...	...	...	...	...	...	...	...	...
E	Violence	173	53	29	24	5	...	2	2	11	16	14	13	4	...
E	Homicide	3	1	1	...	...	...	...	...	1	...	...	...	...	...
E	Suicide	11	...	...	...	...	1	...	2	3	3	2	...	...	...
E	Execution	...	...	...	...	...	...	...	...	...	...	...	...	...	...

TABLE D.

City of Manchester, 1908.—Causes of Death in Infancy and Childhood.

Causes of Death	Under One Year			Total under One Year	One and under Five Years				Total under Five Years
	Under 3 months	3–6 months	6–12 months		1–	2–	3–	4–	
All Causes	1,451	573	879	2,903	926	347	193	140	4,509
Measles	5	3	71	79	154	59	30	22	344
Scarlatina	...	...	5	5	15	15	16	8	59
Whooping Cough	19	22	48	89	73	24	20	8	214
Diphtheria (Memb: Croup)	1	...	10	11	36	14	13	15	89
Fever (various forms)	...	...	...	...	...	1	3	...	4
Diarrhœal Diseases	141	144	171	456	96	20	2	1	575
Syphilis	15	5	2	22	...	...	...	...	22
Tabes Mesenterica and Tuberc. Peritonitis	6	14	9	29	17	5	2	4	57
Tubercular Meningitis	3	12	27	42	39	21	13	10	125
Tuberculosis (other)	9	14	15	38	28	21	8	4	99
Premature Birth	413	9	...	422	...	...	...	...	422
Teething	...	6	17	23	20	1	...	...	44
Convulsions	63	18	27	108	14	9	2	1	134
Brain Diseases (other)	2	12	26	40	29	10	5	7	91
Lung Diseases	140	138	258	536	302	100	48	27	1,013
Atrophy, Marasmus	301	85	66	452	29	8	1	...	490
Found Dead in Bed (overlaid)	55	15	6	76	1	...	..	...	77
Suffocation	7	4	1	12	1	...	1	1	15
Violence (other forms)	3	1	5	9	8	14	18	15	64
Ill-defined Causes	21	1	3	25	4	...	...	...	29
Unclassified	247	70	112	429	60	25	11	17	542

TABLE E, 1881 TO 1908.—MANCHESTER.—ESTIMATED POPULATIONS. ANNUAL RATES OF MARRIAGES, BIRTHS, AND DEATHS *(a)* from all causes, and *(b)* from specified causes; also the percentages to total deaths of Inquest Cases, and of Deaths in Public Institutions; also the quinquennial averages from 1871–1906, with the average for same period.

	Years	Estimated Populations (Mean)	Persons Married	Annual Rates per 1,000 Persons living: Births	Deaths (All Causes)	Smallpox	Measles	Scarlet Fever	Diphtheria	Whooping Cough	Typhus Fever	Enteric Fever	Simple Continued Fever	Diarrhœa and Dysentery	English Cholera	Violence	Percentages to Total Deaths: Inquest Cases	Deaths in Public Institutions	Years	
Quinquennial Averages	1871–1875	477,344	24·6	38·9	28·3	0·26	0·64	1·08	0·08	0·78	0·14	0·43	0·21	1·92	0·03	0·94	7·2	13·4	1871–1875	Quinquennial Averages
	1876–1880	509,802	18·6	38·7	26·2	0·24	0·53	1·07	0·13	0·84	0·08	0·29	0·11	1·22	0·04	0·89	7·5	14·3	1876–1880	
	1881–1885	542,746	17·9	35·1	23·6	0·04	0·71	0·48	0·10	0·68	0·05	0·20	0·03	0·96	0·03	0·72	7·0	15·9	1881–1885	
	1886–1890	575,630	16·6	33·4	24·6	0·02	0·83	0·50	0·32	0·54	0·02	0·30	0·01	1·06	0·02	0·78	6·9	17·7	1886–1890	
	1891–1895	517,801	16·9	33·2	23·6	0·03	0·62	0·26	0·27	0·64	0·00	0·24	0·01	1·14	0·05	0·77	7·1	19·2	1891–1895	
	1896–1900	539,599	18·2	32·5	22·7	...	0·89	0·20	0·13	0·53	0·00	0·18	0·01	1·65	0·04	0·73	7·1	20·2	1896–1900	
	1901–1905	554,355	17·4	30·9	20·1	0·01	0·55	0·19	0·22	0·41	0·00	0·13	0·00	1·15		0·72	7·1	24·4	1901–1905	
Avge. 35 yrs.	1871–1905	527,154	18·8	35·3	24·8	0·10	0·70	0·60	0·17	0·67	0·05	0·27	0·06	1·32	0·03	0·80	7·1	16·8	1871–1905 Avge. 35 yrs	
	1881	530,051	17·8	35·9	22·8	0·03	0·29	0·34	0·09	0·71	0·03	0·17	0·06	0·73	0·02	0·84	8·1	15·9	1881	
	1882	536,324	18·8	35·7	24·0	0·05	0·89	0·34	0·11	0·87	0·10	0·25	0·04	1·00	0·03	0·67	7·2	14·5	1882	
	1883	542,671	17·8	34·9	24·4	0·01	0·71	0·81	0·11	0·62	0·05	0·20	0·03	0·95	0·03	0·73	7·0	15·5	1883	
	1884*	549,093	18·0	34·4	23·4	0·01	0·57	0·74	0·08	0·49	0·03	0·19	0·03	1·46	0·05	0·65	6·2	17·3	1884*	
	1885	555,591	17·0	34·8	23·6	0·08	1·08	0·17	0·10	0·71	0·04	0·17	0·01	0·64	0·02	0·69	6·4	16·4	1885	
	1886	562,166	16·4	34·7	24·1	0·00	0·27	0·41	0·15	0·57	0·03	0·29	0·01	1·34	0·04	0·71	7·2	17·0	1886	
	1887	568,819	16·6	33·9	25·4	0·01	1·54	0·63	0·23	0·50	0·02	0·31	0·01	1·19	0·02	0·77	6·9	16·1	1887	
	1888	575,550	16·0	33·3	23·3	0·07	0·27	0·42	0·36	0·79	0·02	0·33	0·02	0·71	0·01	0·74	6·7	18·3	1888	
	1889	582,362	17·0	33·1	24·2	0·00	1·22	0·45	0·51	0·45	0·01	0·31	0·01	1·00	0·03	0·89	6·5	18·2	1889	
	1890*	589,253	17·0	31·8	26·2	...	0·83	0·60	0·36	0·37	0·01	0·27	0·02	1·04	0·02	0·79	7·0	19·1	1890*	

TABLE E—*Continued*

Years	Estimated Populations (Mean)	Persons Married	Annual Rates per 1,000 Persons living: Births	Deaths (All Causes)	Smallpox	Measles	Scarlet Fever	Diphtheria	Whooping Cough	Typhus Fever	Enteric Fever	Simple Continued Fever	Diarrhœa and Dysentery	English Cholera	Violence	Percentages to Total Deaths: Inquest Cases	Deaths in Public Institutions	Years
1891†	‡ 508,673	17·2	33·8	26·0	…	0·43	0·22	0·25	1·02	0·01	0·37	0·01	0·81	0·04	0·79	6·8	18·4	1891†
1892†	‡ 513,196	17·2	33·4	23·2	0·00	0·72	0·27	0·25	0·72	0·00	0·24	0·01	0·79	0·02	0·77	7·4	18·2	1892†
1893†	‡ 517,760	16·0	33·4	24·3	0·09	0·57	0·27	0·35	0·46	0·00	0·25	0·01	1·75	0·10	0·76	6·9	18·7	1893†
1894†	‡ 522,365	16·8	31·8	19·8	0·04	0·42	0·22	0·29	0·55	…	0·17	0·01	0·70	0·02	0·75	7·5	21·3	1894†
1895†	‡ 527,010	17·4	33·4	24·5	0·00	0·96	0·33	0·21	0·47	…	0·18	0·01	1·66	0·06	0·80	6·9	19·2	1895†
1896†*	‡ 531,697	18·3	32·8	22·0	…	1·05	0·37	0·15	0·66	0·00	0·22	0·01	1·04	0·02	0·71	7·4	19·7	1896†*
1897†	‡ 536,426	17·8	32·9	22·4	…	1·17	0·23	0·08	0·56	0·00	0·18	0·00	1·74	0·06	0·68	6·6	20·0	1897†
1898†	‡ 541,296	18·3	32·3	21·2	…	0·50	0·12	0·09	0·31	…	0·22	0·01	1·96	0·06	0·69	7·0	19·5	1898†
1899†	‡ 546,010	18·4	32·2	23·9	…	1·28	0·08	0·16	0·42	0·00	0·13	0·01	2·02	0·03	0·78	7·0	19·7	1899†
1900†	‡ 542,566	18·0	32·4	23·8	…	0·47	0·19	0·19	0·68	…	0·14	0·01	1·49	0·03	0·78	7·4	21·9	1900†
1901†	‡ 546,408	17·6	28·7	21·6	…	0·53	0·23	0·24	0·41	0·02	0·14	0·00	1·86		0·78	7·9	23·2	1901†
1902†*	‡ 550,355	18·1	33·0	20·0	…	0·44	0·27	0·22	0·44	…	0·12	…	0·54		0·73	7·6	23·8	1902†*
1903†	‡ 554,331	17·8	31·7	19·5	0·04	0·62	0·17	0·25	0·38	…	0·17	0·00	0·91		0·72	7·0	25·3	1903†
1904†	‡ 558,335	16·5	31·1	20·9	0·02	0·76	0·15	0·18	0·50	…	0·12	0·00	1·36		0·73	5·9	24·6	1904†
1905§	‡ 631,933	17·0	29·0	17·8	…	0·37	0·12	0·20	0·31	…	0·09	0·01	1·15		0·59	6·7	24·1	1905§
1905‖	562,346	…	30·1	18·7	…	0·40	0·13	0·22	0·34	…	0·09	0·01	1·27		0·65	6·9	24·9	1905‖
1906§	637,520	18·0	28·9	19·0	…	0·75	0·17	0·19	0·30	…	0·13	0·00	1·54		0·62	7·3	25·4	1906§
1906‖	566,409	…	30·1	19·9	…	0·83	0·19	0·20	0·33	…	0·14	0·00	1·66		0·66	7·3	26·2	1906‖
1907§	643,158	18·3	28·4	17·9	…	0·36	0·16	0·16	0·49	…	0·06	0·00	0·45		0·67	8·0	26·5	1907§
1907‖	570,506	…	29·4	18·7	…	0·39	0·18	0·18	0.52	…	0·06	0·00	0·50		0·71	8·1	27·4	1907‖
1908§*	648,846	16·7	28·9	18·1	…	0·56	0·14	0·19	0·33	…	0·11	…	0·90		0.71	7·4	26·0	1908§*
1908‖*	574,637	…	30·0	18·8	…	0·60	0·16	0·20	0 35	…	0.12	…	0·99		0.76	7·6	27·0	1908‖*

* The facts for these years are for 53 instead of 52 weeks; corrections have, therefore, been made in calculating the rates.

† The populations and rates for the years subsequent to 1890, except the marriage rates, relate to the City of Manchester as enlarged by the Act of that year. The facts and rates for previous years are those for the three Unions of Manchester, Chorlton, and Prestwich, which have been taken to approximately represent "Manchester."

‡ These figures include a proportion of the inmates of certain Extra-municipal Institutions which receive patients from the City of Manchester, and are therefore in excess of the estimates of the Registrar-General.

§ Includes the newly amalgamated districts of Moss Side and Withington. ‖ Exclusive of Moss Side and Withington.

Note.—The population for 1900 is based on the Census figures of 1891 and 1901.

TABLE F, 1881 TO 1908.—MANCHESTER.

ANNUAL RATES OF MORTALITY FROM CERTAIN CAUSES OF DEATH.

YEAR	ANNUAL RATES PER 1,000 PERSONS LIVING										RATES PER 1,000 BIRTHS	
	Cancer	Tuber: Peritonitis Tabes Mes:	Phthisis	Other Tuber: Diseases	Diseases of Nervous System	Diseases of Circulatory System	Diseases of Respiratory System	Diseases of Digestive System	Diseases of Urinary System	Diseases of Generative System	Puerperal Fever	Childbirth
1881–1885	0·50	0·35	2·42	0·57	3·28	1·37	5·41	1·23	0·48	0·08	3·03	1·99
1886–1890	0·64	0·36	2·24	0·59	3·09	1·73	5·76	1·23	0·61	0·08	3·22	2·13
1891–1895	0·62	0·22	2·09	0·75	1·74	2·53	5·56	1·07	0·52	0·07	2·75	3·42
1896–1900	0·73	0·19	2·04	0·63	1·32	2·54	5·03	1·04	0·49	0·09	1·55	1·51
1901–1905	0·80	0·16	1·94	0·55	1·17	2·56	4·29	0·95	0·49	0·08	1·21	1·76
1881–1905	0·66	0·26	2·15	0·62	2·12	2·15	5·21	1·10	0·52	0·08	2·35	2·16
1881	0·48	0·28	2·46	0·52	3·33	1·19	5·57	1·24	0·39	0·07	3·15	1·37
1882	0·44	0·40	2·41	0·61	3·35	1·34	5·33	1·19	0·45	0·08	3·92	1·62
1883	0·54	0·34	2·54	0·59	3·32	1·33	5·66	1·20	0·50	0·06	2·27	1·58
*1884	0·51	0·39	2·34	0·56	3·27	1·44	4·88	1·23	0·59	0·10	2·81	2·55
1885	0·51	0·36	2·34	0·56	3·12	1·53	5·59	1·28	0·49	0·08	3·05	2·84
1886	0·56	0·43	2·44	0·59	3·30	1·53	5·43	1·26	0·57	0·08	2·67	1·85
1887	0·62	0·39	2·19	0·53	3·17	1·66	5·72	1·23	0·53	0·08	3·58	1·35
1888	0·65	0·31	2·14	0·62	3·19	1·72	5·31	1·16	0·62	0·10	4·12	1·77
1889	0·70	0·36	2·12	0·59	2·94	1·79	5·06	1·28	0·64	0·08	3·06	1·87
*1890	0·65	0·33	2·33	0·62	2·87	1·93	7·28	1·22	0·66	0·08	2·68	3·89
†1891	0·63	0·25	2·20	0·78	2·30	2·69	6·77	1·03	0·55	0·07	3·08	4·01
1892	0·61	0·21	2·05	0·75	1·70	2·59	5·44	1·14	0·53	0·05	3·79	4·54
1893	0·59	0·26	2·05	0·76	1·70	2·48	5·53	1·20	0·53	0·07	3·70	3·94
1894	0·66	0·18	1·97	0·67	1·48	2·31	4·35	0·96	0·49	0·04	1·93	2·77
1895	0·63	0·22	2·16	0·77	1·51	2·60	5·73	1·04	0·49	0·11	1·25	1·82
*1896	0·66	0·13	2·00	0·60	1·33	2·53	5·19	1·04	0·46	0·11	0·96	1·47
1897	0·74	0·22	2·12	0·67	1·35	2·45	4·51	1·03	0·51	0·10	2·10	1·36
1898	0·73	0·19	1·95	0·67	1·22	2·15	4·27	1·00	0·54	0·09	1·72	1·54
1899	0·75	0·24	2·05	0·61	1·34	2·73	5·47	0·99	0·47	0·10	1·37	1·54
1900	0·76	0·17	2·09	0·60	1·37	2·82	5·78	1·15	0·48	0·05	1·59	1·65
1901	0·78	0·20	2·09	0·83	1·22	2·55	4·48	1·00	0·49	0·03	2·17	1·72
*1902	0·79	0·16	2·08	0·55	1·13	2·61	4·71	0·93	0·58	0·11	0·94	1·65
1903	0·76	0·18	1·85	0·58	1·25	2·46	3·95	0·99	0·46	0·08	0·80	1·59
1904	0·81	0·15	1·98	0·54	1·17	2·71	4·38	1·02	0·50	0·09	1·04	2·13
‖1905	0·86	0·12	1·56	0·48	1·06	2·47	3·70	0·81	0·41	0·09	1·09	1·80
§1905	0·86	0·13	1·68	0·50	1·10	2·49	3·94	0·83	0·42	0·10	1·12	1·71
‖1906	0·88	0·14	1·71	0·49	1·06	2·68	3·52	0·91	0·47	0·07	1·63	1·63
§1906	0·89	0·15	1·81	0·52	1·09	2·69	3·75	0·95	0·46	0·08	1·76	1·70
‖1907	0·77	0·15	1·70	0·41	1·01	2·53	4·30	0·80	0·56	0·07	1·09	1·26
§1907	0·78	0·16	1·80	0·44	1·04	2·56	4·58	0·83	0·55	0·07	1·07	1·19
‖1908	0·89	0·12	1·65	0·47	0·96	2·52	3·91	0·87	0·59	0·06	1·16	1·31
§1908	0·87	0·12	1·74	0·47	0·97	2·55	4·19	0·89	0·58	0·06	1·14	1·37

* The facts for these years are for 53 instead of 52 weeks; corrections have therefore been made calculating the rates.

† The rates of mortality for the years subsequent to 1890 refer to the City of Manchester as arged by the Act of that year. The rates for 1890 and for previous years are those for the three Unions Manchester, Chorlton, and Prestwich, which have been taken to approximately represent "Manchester."

‖ Includes the newly amalgamated districts of Moss Side and Withington.

§ Exclusive of Moss Side and Withington.

TABLE G, 1908.—Population, Area, Density. Total Births and Deaths, with Birth and Death Rates.

[Institution Populations, Births and Deaths, distributed.]

STATISTICAL DIVISIONS	* Estimated Population	Area in Acres	Persons to an Acre	BIRTHS		DEATHS		Natural Rate of Increase
				Total	Rate per 1,000	Total	Rate per 1,000	
City of Manchester	648,846	19,059	34	19,041	28·89	11,930	18·10	10·79
I. Manchester Township	125,197	1,646	76	4,129	32·47	3,143	24·72	7·75
II. North Manchester	197,527	7,321	27	5,673	28·27	2,962	14·76	13·51
III. South Manchester	326,122	10,092	32	9,239	27·89	5,825	17·58	10·31
I. Ancoats	43,206	400	108	1,547	35·25	1,025	23·36	11·89
I. Central	24,922	748	33	654	25·83	665	26·27	−0·44
I. St. George's	57,069	498	115	1,928	33·26	1,453	25·07	8·19
II. Cheetham	42,376	919	46	1,193	27·72	503	11·69	16·03
II. Crumpsall	9,430	733	13	214	22·34	112	11·69	10·65
II. Blackley	9,830	1,840	5	288	28·84	168	16·83	12·01
II. Harpurhey	23,318	193	121	515	21·74	252	10·64	11·10
II. Moston	20,826	1,297	16	536	25·34	227	10·73	14·61
II. Newton Heath	39,153	1,350	29	1,226	30·83	757	19·03	11·80
II. Bradford	25,355	288	88	868	33·70	503	19·53	14·17
II. Beswick	12,588	96	131	425	33·24	227	17·75	15·49
II. Clayton	14,651	605	24	408	27·42	213	14·31	13·11
III. Ardwick	45,324	509	89	1,277	27·74	751	16·31	11·43
III. Openshaw	29,040	581	50	973	32·99	563	19·09	13·90
III. West Gorton	32,316	318	102	969	29·52	542	16·51	13·01
III. Rusholme and Kirk.	27,007	1,412	19	904	32·95	460	16·77	16·18
III. Chorlton-upon-Medlock	55,597	646	86	1,352	23·94	1,131	20·03	3·91
III. Hulme	62,629	477	131	2,259	35·51	1,466	23·05	12·16
III. Moss Side	28,522	421	68	635	21·92	416	14·36	7·56
III. Withington	45,687	5,728	8	870	18·75	496	10·69	8·06

* Note.—Calculated on the Census of 1891 and 1901.

TABLE H, 1908.

BIRTHS REGISTERED IN THE CITY OF MANCHESTER, IN ITS MAIN DIVISIONS AND IN DISTRICTS; DISTINGUISHING LEGITIMATE AND ILLEGITIMATE BIRTHS; ALSO THE PROPORTION OF MORTALITY AMONG INFANTS OF BOTH CLASSES UNDER ONE YEAR OF AGE.

STATISTICAL DIVISIONS		BIRTHS		Percentage of Illegitimate Births to Total Births	DEATHS UNDER 1 YEAR		PROPORTION OF DEATHS UNDER 1 YEAR PER 1,000 BIRTHS		
		Total	Illegitimate		Total	Of Illegitimate Children	Total	Legitimate	Illegitimate
City of Manchester		**19,041**	**733**	**3·9**	**2,903**	**230**	**152**	**146**	**314**
I.	Manchester Township	4,129	179	4·4	806	63	195	188	352
II.	North Manchester	5,673	132	2·3	751	36	132	129	273
II.	South Manchester	9,239	422	4·6	1,346	131	146	138	310
I.	Ancoats	1,547	52	3·4	289	14	187	184	269
I.	Central	654	39	6·0	141	20	216	197	513
I.	St. George's	1,928	88	4·6	376	29	195	189	330
II.	Cheetham	1,193	29	2·4	120	9	101	95	310
II.	Crumpsall	214	10	4·7	21	1	98	98	100
II.	Blackley	288	11	3·8	33	3	115	108	273
II.	Harpurhey	515	14	2·7	65	7	126	116	500
II.	Moston	536	11	2·1	56	2	104	103	182
II.	Newton Heath	1,226	28	2·3	188	5	153	153	179
II.	Bradford	868	16	1·8	135	3	156	155	188
II.	Beswick	425	8	1·9	74	5	174	165	625
II.	Clayton	408	5	1·2	59	1	145	144	200
II.	Ardwick	1,277	35	2·7	205	12	161	155	343
II.	Openshaw	973	30	3·1	159	13	163	155	433
II.	Gorton (West)	969	31	3·2	136	11	140	133	355
II.	Rusholme and Kirk.	904	37	4·1	96	10	106	99	270
II.	Chorlton-on-Medlock	1,352	126	9·3	213	36	158	144	286
II.	Hulme	2,259	109	4·8	373	33	165	158	303
II.	Moss Side	635	28	4·4	67	4	106	104	143
II.	Withington	870	26	3·0	97	12	111	101	462

TABLE J, 1908.

Infantile Mortality in the City, and its Three Main Divisions.

Death-rates under One Year per 1,000 Births.

Causes of Death	City of Manchester	Manchester Township	North Manchester	South Manchester
All Causes	152·46	195·21	132·38	145·69
Measles	4·15	4·36	4·05	4·11
Whooping Cough	4·67	3·15	3·88	5·85
Other Com: Infectious Diseases†	0·84	1·21	1·06	0·54
Diarrhœal Diseases	23·95	37·78	17·80	21·54
Tubercular Diseases‡	5·73	8·23	2·64	6·49
Convulsions	5·67	3·39	5·11	7·04
Other Nervous Diseases§	2·10	0·97	2·97	2·06
Lung Diseases	28·15	38·75	25·38	25·11
Premature Birth.....	22·16	28·58	20·45	20·35
Atrophy, &c. ‖	23·74	28·82	25·56	20·35
Suffocation	0·74	1·94	0·35	0·43
Found dead in bed (overlaid) ...	4·04	7·27	2·11	3·79

† These are Smallpox, Scarlatina, Diphtheria, Membranous Croup, and various forms of "Fever," including the chief forms of Typhus and Typhoid.

‡ These are Phthisis, Tubercular Meningitis (Hydrocephalus), Tabes Mesenterica, and General Tuberculosis (Scrofula).

§ These are Meningitis, and other diseases of the Brain and Spinal Cord.

‖ These are such ill-defined causes as Atrophy, Marasmus, Debility, Inanition, &c.

TABLE K, 1908.—CITY OF MANCHESTER. ANNUAL RATES OF MORTALITY PER 1,000 PERSONS LIVING AT ALL AGES, IN THE CITY OF MANCHESTER AND IN ITS STATISTICAL DIVISIONS, FROM CERTAIN DISEASES AND GROUPS OF DISEASES.

CAUSES OF DEATH	City of Manchester	City—exclusive of Moss Side and Withington	Manchester Township	North Manchester	South Manchester	South—exclusive of Moss Side and Withington	City of Manchester exclusive of Withington and Moss Side Average of 10 years 1898-1907
All Causes	18·10	18·83	24·72	14·76	17·58	19·20	20·74
Smallpox	...	...	...	...	...	...	0·01
Measles	0·56	0·60	0·70	0·54	0·51	0·59	0·62
Scarlet Fever	0·14	0·16	0·18	0·14	0·12	0·16	0·17
Typhus Fever	...	...	...	...	...	...	...
Influenza	0·20	0·20	0·13	0·22	0·21	0·22	0·20
Whooping Cough	0·33	0·35	0·31	0·26	0·37	0·43	0·43
Diphtheria and Memb: Croup.	0·19	0·20	0·23	0·16	0·19	0·21	0·19
Ill-defined Fever	...	...	...	...	...	...	0·00
Enteric Fever	0·11	0·12	0·15	0·07	0·13	0·15	0·13
Diarrhœal Diseases	0·90	0·99	1·58	0·67	0·77	0·95	1·36
Puerperal Fever	0·03	0·03	0·03	0·05	0·02	0·02	0·04
Erysipelas	0·03	0·03	0·06	0·04	0·02	0·02	0·04
Pyæmia, Septicæmia	0·06	0·06	0·09	0·05	0·06	0·06	0·03
Phthisis (Tuberc: Pulmon:)	1·65	1·74	2·79	1·08	1·56	1·75	1·93
Tubercular Meningitis	0·26	0·26	0·37	0·16	0·28	0·29	0·27
Tuberc: Periton: Tabes Mes:	0·12	0·12	0·17	0·07	0·13	0·13	0·17
Tuberculous Dis: (other)	0·21	0·21	0·29	0·13	0·23	0·23	0·32
Alcoholism	0·05	0·06	0·09	0·02	0·05	0·07	0·13
Cancer	0·89	0·87	0·96	0·70	0·97	0·97	0·79
Rheumatic Fever	0·04	0·03	0·04	0·04	0·04	0·03	0·07
Premature Birth	0·64	0·68	0·93	0·58	0·57	0·63	0·65
Nervous Diseases	0·96	0·97	1·05	0·83	1·00	1·03	1·19
Heart and Blood Vessels Diseases	2·52	2·55	2·56	2·35	2·61	2·71	2·57
Bronchitis	1·75	1·88	3·08	1·34	1·48	1·70	2·01
Pneumonia	1·96	2·10	3·11	1·55	1·77	2·04	2·23
Respiratory Diseases (other)	0·21	0·21	0·28	0·22	0·17	0·17	0·26
Digestive Organs (Diseases of)	0·87	0·89	1·01	0·73	0·91	0·95	0·97
Urinary Organs (Diseases of)	0·59	0·58	0·72	0·38	0·66	0·66	0·50
Old Age	0·40	0·39	0·49	0·29	0·43	0·43	0·42

TABLE L, 1908.

MANCHESTER.—Certification of the Causes of Death in the Main Divisions and in Districts.

STATISTICAL DIVISIONS.	Total Deaths	Certified by		Not Certified	Proportion per cent. of Deaths		
					Certified by		
		Registered Medical Practitioners	Coroner		Regist'd Medical Practitioners	Coroner	Not Certified
City of Manchester	**11,930**	**10,977**	**882**	**71**	**92·0**	**7·4**	**0·6**
I. Manchester Township ...	3,143	2,836	277	30	90·2	8·8	1·0
II. North Manchester	2,962	2,752	192	18	92·9	6·5	0·6
III. South Manchester	5,825	5,389	413	23	92·5	7·1	0·4
I. Ancoats	1,025	934	81	10	91·1	7·9	1·0
I. Central	665	565	91	9	84·9	13·7	1·4
I. St. George's	1,453	1,337	105	11	92·0	7·2	0·8
II. Cheetham	503	459	43	1	91·3	8·5	0·2
II. Crumpsall	112	110	2	...	98·2	1·8	...
II. Blackley	168	156	8	4	92·8	4·8	2·4
II. Harpurhey	252	231	18	3	91·7	7·1	1·2
II. Moston	227	215	10	2	94·7	4·4	0·9
II. Newton Heath	757	704	48	5	93·0	6·3	0·7
II. Bradford	503	465	36	2	92·4	7·2	0·4
II. Beswick	227	211	15	1	93·0	6·6	0·4
II. Clayton	213	201	12	...	94·4	5·6	...
III. Ardwick	751	690	61	...	91·9	8·1	...
III. Openshaw	563	522	38	3	92·7	6·8	0·5
III. Gorton (West)	542	501	39	2	92·4	7·2	0·4
III. Rusholme and Kirk. ...	460	428	30	2	93·1	6·5	0·4
III. Chorlton-upon-Medlock	1,131	1,028	95	8	90·9	8·4	0·7
III. Hulme	1,466	1,353	105	8	92·2	7·2	0·6
III. Moss Side	416	401	15	...	96·4	3·6	...
III. Withington	496	466	30	...	94·0	6·0	...

TABLE M, 1908—CITY OF MANCHESTER.—ANNUAL RATES OF MORTALITY AT SIX GROUPS OF AGES, * PER 1,000 LIVING AT THOSE AGE GROUPS, FROM CERTAIN PREVALENT DISEASES, AND GROUPS OF DISEASES.

CAUSES OF DEATH		Under 5 Years	5 to 14 Years	15 to 24 Years	25 to 44 Years	45 to 64 Years	65 Years and upwards
All Causes		60·01	3·37	3·38	8·59	28·99	103·32
Smallpox		...	...	...	...	...	...
Measles		4·58	0·17	...	...	...	...
Scarlatina		0·79	0·19	0·03	0·02	...	...
Diphtheria, Memb. Croup		1·18	0·23	0·01	0·00	...	...
Whooping Cough		2·85	0·05	...	...	...	...
Fever	Typhus	...	...	...	...	...	...
	Enteric	0·05	0·04	0·10	0·20	0·12	...
	Continued	...	...	...	...	...	...
Diarrhœal Diseases		7·65	0·01	0·01	...	0·03	0·55
Tubercular Diseases		3·74	0·92	1·21	2·77	3·38	1·70
Malignant Disease		0·01	...	0·04	0·52	3·46	7·44
Diseases of ...	Nervous System	2·99	0·22	0·20	0·50	1·56	5·09
	Heart and Blood Vessels	0·17	0·27	0·42	1·12	7·28	32·47
	Respiratory System	13·48	0·32	0·51	1·41	6·38	28·60
	Digestive System	3·62	0·19	0·20	0·41	1·29	2·40
	Urinary System	0·24	0·05	0·10	0·40	1·83	4·84
Other Diseases		18·64	0·72	0·56	1·23	3·66	20·31

* For death-rates at all ages, see Table K.

TABLE N, 1908—ANNUAL RATES OF MORTALITY IN STATISTICAL DIVISIONS AT SIX GROUPS OF AGES, *PER 1,000 LIVING AT THOSE AGE GROUPS, FROM CERTAIN PREVALENT DISEASES, AND GROUPS OF DISEASES.

CAUSES OF DEATH	Under 5 Years			5 to 14 Years			15 to 24 Years		
	Manchester Township	North Manchester	South Manchester	Manchester Township	North Manchester	South Manchester	Manchester Township	North Manchester	South Manchester
All Causes	84·03	46·85	59·05	4·10	3·01	3·32	3·49	3·07	3·54
Smallpox	...	...	...	...	...	...	...	..	...
Measles	5·68	4·12	4·44	0·15	0·16	0·17	...	...	...
Scarlatina	0·94	0·89	0·65	0·35	0·12	0·17	...	...	0·06
Diphtheria, Memb. Croup	1·80	0·93	1·10	0·08	0·21	0·32	...	...	0·03
Whooping Cough	2·54	2·06	3·53	0·04	0·05	0·05	...	...	...
Fever — Typhus	...	...	...	...	..	...	...	...	...
Fever — Enteric	...	0·04	0·08	0·04	0·02	0·05	0·23	0·02	0·10
Fever — Continued	...	...	...	...	...	...	...	...	...
Diarrhœal Diseases	13·16	5·21	7·04	0·04	...	...	...	0·02	...
Tubercular Diseases	5·01	1·65	4·66	1·16	0·83	0·89	1·16	0·95	1·38
Malignant Disease	0·07	...	...	...	...	...	...	0·02	0·06
Diseases of — Nervous System	2·47	3·03	3·19	0·39	0·16	0·19	0 19	0·14	0·23
Diseases of — Heart & Blood Vess:	0·13	0·20	0·17	0·23	0·30	0·27	0·54	0·38	0·41
Diseases of — Respiratory System.	20·78	11·14	12·04	0·66	0·25	0·22	0·77	0·50	0·42
Diseases of — Digestive System	4·74	2·46	3·96	0·15	0·14	0·24	0·08	0·31	0·17
Diseases of — Urinary System	0·40	0·32	0·11	0·04	0·05	0·06	0·04	0·12	0·10
Other Diseases	26·32	14·81	18·08	0·77	0·74	0·68	0·46	0·59	0·57

CAUSES OF DEATH	25 to 44 Years			45 to 64 Years			65 Years and upwards		
	Manchester Township	North Manchester	South Manchester	Manchester Township	North Manchester	South Manchester	Manchester Township	North Manchester	South Manchester
All Causes	12·96	6·55	8·19	40·13	25·17	26·64	110·73	98·45	102·94
Smallpox	...	...	...	...	...	...	...	...	...
Measles	...	...	...	...	...	...	...	. .	...
Scarlatina	...	0·02	0·03	...	...	...	...	...	...
Diphtheria, Memb. Croup	...	...	0·01	...	...	...	...	...	...
Whooping Cough	...	...	...	...	...	...	...	...	...
Fever — Typhus	...	...	...	...	...	...	...	...	...
Fever — Enteric	0·27	0·12	0·23	0·10	0·12	0·12	...	...	...
Fever — Continued	...	...	...	...	...	...	...	...	...
Diarrhœal Diseases	...	...	...	...	0·08	0·02	0·76	0·39	0·55
Tubercular Diseases	5·01	1·78	2·54	6·56	2·20	2·76	3·03	1·74	1·19
Malignant Disease	0·51	0·42	0·58	3·72	3·14	3·53	7·84	6·59	7.69
Diseases of — Nervous System	0·48	0·45	0·54	2·15	1·33	1·45	5·81	3·29	5·68
Diseases of — Heart & Blood Vess:	1·23	1·02	1·13	7·97	7·41	6·94	26·80	36 43	32·51
Diseases of — Respiratory System.	2·99	1·07	1·04	11·12	5·02	5·25	38·18	24·22	27·20
Diseases of — Digestive System	0·45	0·39	0 40	1·52	1·25	1·22	1·26	2·33	2·84
Diseases of — Urinary System	0·59	0·25	0·42	2·15	1·06	2·10	5·31	3·68	5·22
Other Diseases	1·44	1·04	1·27	4·83	3·57	3·25	21·74	19·77	20·06

* For death-rates at all ages, see Table K.

TABLE O, 1908.—PARTICULARS AS TO MANCHESTER PATIENTS UNDER TREATMENT IN THE SEVERAL FEVER HOSPITALS DURING THE YEAR; ALSO OF PATIENTS FROM OUTSIDE DISTRICTS SENT TO MONSALL AND CLAYTON DURING THE SAME PERIOD.

Disease	Hospital	In Hospital commencement of year	Admitted	Discharged	Died	Remaining in Hospital close of year
Smallpox	Clayton Hospital	...	...	...	...	...
	Total	...	...	...	...	...
Scarlet Fever	Monsall	268	1,772	1,721	64	255
	Baguley Sanatorium	52	279	298	5	28
	Other Hospitals	...	...	...	...	...
	Total	320	2,051	2,019	69	283
Diphtheria	Monsall	25	269	222	53	19
	Baguley Sanatorium	2	38	35	1	4
	Other Hospitals	...	...	...	...	...
	Total	27	307	257	54	23
Enteric Fever	Monsall	34	194	151	31	46
	Baguley Sanatorium	...	...	...	...	...
	Other Hospitals	...	...	...	...	...
	Total	34	194	151	31	46
Typhus Fever	Monsall	...	...	...	...	...
	Baguley Sanatorium	...	...	...	...	...
	Other Hospitals	...	...	...	...	...
	Total	...	...	...	...	..
Other Acute Diseases	Monsall	16	328	277	37	30
	Baguley Sanatorium	...	2	2	...	...
	Total	16	330	279	37	30
All Diseases		397	2,882	2,706	191	382

PATIENTS SENT TO MONSALL OR CLAYTON, FROM DISTRICTS OUTSIDE THE CITY DURING THE YEAR 1908.

Disease	Northern Hospital	Swinton Schools	Royal Infirmary	Pendlebury Hospital	Barnes' Convales. Hospital	Ancoats Hospital	Outside Districts
Smallpox	...	...	...	...	...	...	...
Scarlatina	...	7	1	9	2	...	6
Diphtheria	...	...	3	1	...	1	1
Enteric Fever	...	...	2	...	...	...	11
Other Diseases	...	...	3	1	...	...	6

Total, 54.

TABLE P, 1908.—Work of Sanitary Department for the Year.

		TOWNSHIPS																					TOTALS
		Ancoats	Central	St. George's	Cheetham	Crumpsall	Blackley	Harpurhey	Moston	Newton	Bradford	Beswick	Clayton	Ardwick	Openshaw	Gorton (West)	Rusholme and Kirkmanshulme	Chorlton-upon-Medlock	Hulme	Moss Side (Incorporated Nov. 1904)	Withington	Didsbury	Chorlton-cum-Hardy	
Complaints to Sanitary Superintendent ...		204	533	296	517	13	31	32	...	135	157	9	25	143	33	5	152	560	258	214	...	...	...	3,317
Inspections of	Dwelling-houses	5396	3422	6522	2795	841	791	1214	1097	3597	1805	1285	826	3471	1867	1876	1931	5858	4838	3260	...	...	...	52,692
	Newly-infected Dwelling-houses	286	177	403	330	83	63	148	132	285	120	54	67	270	177	206	222	308	324	205	...	...	...	3,860
	Cellars	...	...	7	78	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	86
	Schools	17	...	1	...	...	...	...	1	2	1	4	...	1	...	...	2	1	2	...	...	...	...	32
	Factories and Workshops	62	9	44	39	...	...	...	...	5	12	...	5	5	1	...	7	12	3	1	...	...	...	205
	Lodging-houses	353	1191	1121	542	1	...	3	5	1	10	5	...	26	4	4	...	163	299	...	...	...	...	3,728
	Offensive Trades	11	45	153	5	8	9	1	...	139	13	18	2	...	15	...	...	10	44	9	...	...	..	482
	Dairies and Milkshops	230	184	144	108	1	64	18	41	47	34	52	11	119	55	64	53	130	151	46	...	...	...	1,552
	Ice Cream Manufacturers	628	89	84	59	...	...	...	...	6	25	25	4	65	32	36	...	78	19	...	...	...	...	1,150
	Bakehouses	69	152	106	237	8	16	88	69	67	46	8	45	58	105	69	124	242	239	153	...	...	...	1,901
	Canal Boats	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2,147
	Slaughter-houses	...	4	1	...	...	1	...	...	9	...	...	...	...	...	...	...	...	2	...	...	...	...	17
	Tips for Refuse	..	...	26	...	...	...	...	21	1	...	...	7	...	...	...	1	...	...	1	...	...	...	57
	Miscellaneous Inspections	564	2277	1116	674	338	215	171	146	468	568	177	139	512	438	112	492	1246	1522	138	...	...	...	11,313
	Factories and Workshops by Shop Hours, &c., Inspectors	835	5359	996	2426	17	38	160	69	247	102	34	80	297	246	222	313	1478	1082	327	...	...	...	14,328
	Shops by Shop Hours, &c., Inspectors	100	1379	426	1117	58	57	298	75	24	26	63	53	118	82	206	433	709	316	117	...	...	...	5,657
Infected Rooms Disinfected		797	506	871	759	129	298	812	363	819	318	216	212	996	638	888	626	840	1306	26	...	...	...	11,420
Infected Dwellings Re-inspected		894	345	822	661	177	180	407	288	888	242	446	122	423	327	424	460	537	422	225	...	...	...	8,290
Drains Tested by Water		1695	511	1397	945	270	461	115	319	973	337	381	246	748	468	325	511	1090	1704	724	...	...	...	13,220
Smoke Abatement	Observations made	19	50	24	30	7	31	4	441	56	76	4	17	28	53	23	9	19	10	6	3	...	...	910
	Proceedings before Magistrates	9	17	9	14	2	3	2	10	15	13	1	4	10	11	9	3	4	4	1	2	...	...	143
Food Adulteration	Samples Collected for Analysis	169	312	162	82	19	18	58	19	85	73	22	35	84	94	105	162	324	458	204	88	78	64	*2,720
	Proceedings before Magistrates	6	33	5	10	...	...	...	2	2	5	...	3	...	17	3	1	11	14	5	1	1	2	121
Ashpits reported to Cleansing Department for emptying		9	3	2	2	9	4	...	2	7	2	...	1	1	3	1	20	5	5	37	...	...	...	113
Receptacles reported to Cleansing Department for emptying		89	22	21	61	1	2	4	1	22	6	34	1	3	5	9	10	29	24	...	...	...	...	344
Notices issued for Abatement of Nuisances.		1037	552	933	1159	232	291	281	217	657	258	188	205	576	228	260	477	984	465	201	1	...	...	9,202
Letters written for Abatement of Nuisances		86	37	65	98	5	8	18	13	22	9	8	11	16	7	4	13	40	38	9	...	...	...	507
Reports made to Medical Officer of Health		...	8	59	...	...	1	2	...	...	1	...	...	2	...	...	23	1	1	3	...	...	...	101
Legal proceedings taken		32	24	32	20	...	9	...	2	6	3	1	2	...	6	4	...	12	15	1	...	...	...	†173
Total Nuisances abated		838	540	846	1096	240	283	274	235	482	234	188	184	433	205	322	473	819	452	207	...	...	...	8,351
‡ Number of Cottages under Five Rooms....																					...	...	...	...

* 5 Samples procured Outside the City.

† 4 cases Infringement of Canal Boats Acts.

APPENDIX.

The Midwives Supervising Committee present, for the information of the City Council, the following reports from their officials of the operations carried on in Manchester during 1908 under the Midwives Act, 1902 :—

Statement by Dr. Niven, Medical Officer of Health.

The Medical Officer of Health begs to present to the Midwives Supervising Committee the report of their Executive Officer, Dr. Margaret Merry Smith, along with a statement by Dr. Gordon of the work done by him during the year 1908.

No striking changes have occurred during the year in the administration of the Act.

The Medical Sub-Committee have given much time to the consideration of the payment of fees to medical men called in by midwives, and have thereby safeguarded the interests alike of medical practitioners and of the community.

A number of breaches of the rules of the Central Midwives Board have been considered by the Committee, although these are happily less numerous and less hurtful than they were after the Midwives Act first came into operation. The reports of the cases have been carefully prepared by Dr. Merry Smith, who has also kept the practice of the midwives under observation. It cannot be said that this requires less supervision than it formerly did, since, although a higher level of care and knowledge has now been reached, the original level was a low one, and constant watchfulness is still needed.

Dr. Merry Smith has continued her courses of instructions to midwives, who as a body have responded in a satisfactory manner, and have shown a desire to act with the authority, and to do all the good they can. This is very clearly proved by the manner in which they have voluntarily notified births in all those districts in which such notification can be utilised, owing to their being provided with health visitors, and in some others No friction has arisen with the health visitors, who, in their turn, have been instructed not to give instructions conflicting with those given by practitioners or midwives.

As Dr. Merry Smith has stated in her report, the question of shortage of midwives in 1910, in and after which persons may not habitually and for gain attend women in child-birth otherwise than under the direction of a qualified medical practitioner, scarcely arises in Manchester. Nevertheless, the question as to the operation of the Act in rural districts is not without interest to urban centres. It is difficult to believe that there will be no shortage. The Midwives Act brought into prominence the great deficiency of midwives actually existing,

and to say the least, this shortage must continue. There appears at present to be no means of effectually coping with it, and there seems to be some danger that the purposes of the Act will be partially frustrated in rural areas, owing to the difficulty which midwives experience in making a livelihood. The strict enforcement of the Act would be found in all probability to entail the creation of a new public health service of persons qualified as nurse, midwife, school-nurse, and health visitor, paid by the districts to which they are allotted. Suitable payments might, of course, be made to the district authorities by the persons and institutions to whom their services are rendered. By some such arrangement it might be possible to have throughout the country a properly trained body of midwives.

As regards Manchester there is no rapid alteration in the personel of the practising midwives, and this is just as well, since experience is by no means to be despised if it is combined with a reasonable measure of care and intelligence.

There is shown here a slight tendency to diminution in the number of the midwives, a tendency which it may be hoped will not persist, although one would not on that account desire to retain in practice midwives who show themselves unfitted for the work.

Vacancies occur in districts which do not get suitably filled up, or do not get filled up at all. Some agency is needed by which vacant places may be filled by suitable persons, as they occur.

It is almost inevitable that the supply of certified midwives should at first exceed the demand, partly because candidates do not understand how limited is the number of openings for midwives who have to earn a livelihood from their practice, partly because the qualification is useful for other purposes than midwifery, and partly also because many persons will take the qualification simply to extend the bounds of their knowledge. In any case the result is that the number of available midwives appears at present to be increasing.

The shortage in many districts does not depend on the absence of available midwives, but on their difficulty in making a living.

It is somewhat surprising to find how many applicants for the position of health visitor have taken the certificate of the Central Midwives Board as well as the qualification of Sanitary Inspector. It is manifest that there is a great movement in progress for the appointment of health visitors possessed of practical knowledge as regards mothers and infants, and of knowledge, mostly theoretical, respecting sanitary matters.

Some cases of much interest have come before the Committee during the year 1908. It is not proposed, however, to do more than refer to the detailed

statement given in Dr. Merry Smith's report. Data are given in Tables B, C, D, E, and F in reference to the occurrence of cases of Puerperal Fever during the year. It will be noted that the morbidity and mortality from this disease were both higher in 1908 than in 1907, but the figures for the cases attended by midwives must be regarded as eminently satisfactory. This is due in part to the supervision exercised by the Committee, but also in part to the instruction given by Dr. Merry Smith.

Several questions of importance have arisen. One of these is the prevention of blindness or serious injury to sight arising from the occurrence and insufficient treatment of Ophthalmia Neonatorum. The matter had not been overlooked by the Committee, and had, in fact, been dealt with in their instructions to midwives. Again, on December 21st, 1906, a special circular was sent to midwives calling their attention to the necessity of securing medical aid immediately on the appearance of the slightest inflammation of the eyes, eye-lids, or ears. Moreover, Dr. Merry Smith had from time to time given special instruction to midwives.

Further consideration of the matter arose in connection with a circular from the North of England Union for the Blind, bearing date January 21st, 1908, in which the request was made that the attention of midwives should be drawn to the imperative necessity of thoroughly cleansing the eyes of the new-born child after birth.

As already mentioned, this had in effect been done from time to time, but the circular led to a careful consideration by the Medical Sub-Committee of the further measures to be taken.

As a result an interview was arranged between the Committee and two of the staff of the Royal Eye Hospital—Dr Glascott and Dr. MacNab—at which a number of important points were raised.

The chief outcome of the Conference was that the representatives of the Eye Hospital undertook that cases coming under treatment at the hospital should be notified to the Medical Officer of Health on cards to be provided by the Midwives Supervising Committee. The officers of the Committee were also instructed to draw the attention of midwives pointedly to the need for special care and promptitude in regard to this affection. This has been done.

Amongst the subjects raised at this Conference were the following :—

> Is any danger to be instituted from the use of a two per cent. solution of silver nitrate, a drop being introduced into the eye of the new-born infant by the midwife ? In the opinion of the staff of the Eye Hospital no danger can arise, and this procedure is desirable in all cases as a prophylactic measure.

The further question was discussed whether after this precaution had been adopted danger does not arise from re-introduction of infection into the eyes from the bath, and it was agreed that special care must be exercised in cleansing the body of the child to avoid the introduction of the head and body washings into the eyes.

The Sub-Committee in considering the questions raised at this Conference remained doubtful as to the advisability of entrusting to midwives the general treatment of eyes with solution of silver nitrate, and considered that the most important matter was to get children showing signs of Ophthalmia immediately under medical treatment.

The Chairman suggested that arrangements might be made for a demonstration to be given to midwives in the method of dropping silver nitrate into the eyes at the Eye Hospital. This would be useful if it could be arranged.

In the issue of the *British Medical Journal* of May 8th, 1909, is given the report of the Ophthalmia Neonatorum Committee of the British Medical Association, appointed in 1907. The same difference of opinion is everywhere manifest as to the amount of discretion which may safely be given to midwives, although there is little or no difference of opinion as to the best mode of prevention.

The measures recommended may be thus summarised:—

1. Midwives and others attending confinements to cleanse the external surface over and around the eyes, before they are opened, with dry clean lint, a distinct piece being used for each eye.

2. The child's head to be then washed, care being taken to prevent the water from reaching the eyes. The body to be washed in fresh water, the same care being observed.

3. These precautions to be specially observed when there is vaginal discharge.

4. When there is vaginal discharge, medical aid to be called in by midwives. This, it will be noted, does not reach cases not attended by doctors or midwives.

5. All cases of redness and swelling of the eyelids in the new-born, or of purulent discharge from the eyes, however slight, to be forthwith notified to the Medical Officer of Health in the same manner as other infectious diseases.

6. Midwives to content themselves with careful cleansing of the eyes in cases where no suspicion has arisen. If infection of the vagina is suspected, a medical practitioner should be consulted.

7. If, however, signs of Ophthalmia have made their appearance, no time is to be lost. The midwife must not herself undertake the treatment of the affection, but must see that medical assistance is immediately obtained.

It will be seen that the measures additional to those already taken here are: (1) Notification of Ophthalmia Neonatorum *by all attendants on confinements* immediately on the signs being evident. The proposal appears a good one; (2) More complete instruction of midwives, further insistence on detail in cleansing, some increase in the discretion given to midwives in preventive treatment, and rigid enforcement of immediate notification.

The experiences recorded in the memorandum of the Committee of the British Medical Association amply testify to the splendid results which may be attained merely by ordinary care and thoroughness in cleansing.

On the 18th and 24th June the Medical Sub-Committee, at the instance of Dr. Skinner, took under their consideration the practice of midwifery by unqualified persons, and the mischiefs believed to arise from the attendance on lying-in women of untrained and badly trained monthly nurses, and passed two resolutions.

The first affirmed that in order to deal effectually with the prevention of Puerperal Fever it is necessary that all women practising as "monthly" and "midwifery" nurses be placed under the control of the Midwives Supervising Authority, and that the Government be urged to extend the provisions of the Midwives Act of 1902 so as to confer such control.

The second resolution in effect sets forth a scheme by which, apart from fresh legislation, monthly nurses might be reached, instructed, and to some extent supervised. *Inter alia* this scheme provided for the keeping of a register of monthly nurses, and, on the question of the advisability of keeping such a register being referred to the Deputy Town Clerk (Mr. Hudson), the Committee were advised that in his opinion the keeping of an official list involved responsibility for the character of the monthly nurses, without power of control, and is therefore undesirable.

The Medical Sub-Committee again took the matter into their consideration, and passed the following resolutions: (1) That a book of instructions for monthly nurses be compiled by this Committee, printed in a handy form, and distributed gratis on application to women who practise as monthly nurses; (2) that all

women practising as monthly nurses in the City of Manchester be invited to give in their names and addresses to the Midwives Supervising Committee; (3) that a letter be sent to each of the Medical Societies in Manchester inviting the co-operation and assistance of their members in carrying out the scheme by encouraging the best class of unqualified women practising as monthly nurses to apply for the instructions, and to give in their names to the Committee.

A Special Sub-Committee was appointed to draw up a set of instructions, which were duly considered by the Medical Sub-Committee and issued as directed. Copies have been sent to medical practitioners with a covering letter offering to supply others for the use of monthly nurses on application. Copies have also been sent to the various Medical Societies in terms of part 3 of the resolution. No list (unofficial) has been as yet compiled of monthly nurses, and it is believed that such a list will be very difficult to obtain.

In consequence of a question by Dr. Scotson as to the risk of Measles being conveyed by midwives and others attending in houses in which that disease is present, the Medical Officer of Health consulted the Medical Officers of Health of Liverpool, Birmingham, Glasgow, and Stockport. Their experience agreed with his own that such an event must be of extreme rarity, and may for practical purposes be neglected. A report to this effect was made to the Committee, dated October 28th, 1908.

The Midwives Act has, as will be seen from the reports of the Executive Officer, and of Dr. Gordon, and as appears in the Committee's Minute books, been administered with efficiency and thoroughness. Yet there are portions of the work arising in connection with it to which it has not been possible to give the amount of attention necessary to obtain the results desired.

The investigation of still-births has not been pursued in detail. The returns obtained from the Registrars of Cemeteries do not agree with those obtained from midwives, falling short of these in number, and that to such an extent as to suggest that a number of bodies may not be separately interred.

It is desirable that the particulars of such cases should be known in the office. Apart, however, from these instances it is very desirable that the causes and incidents of still-births should be investigated.

The care of the mother and child during the first ten days of life, and the advice given to mothers at this period, is an important branch of the midwives practice, to which systematic supervision may usefully be given.

The question of the advice to be given by midwives to pregnant women who come to engage their services is an important subject which has been raised

in Committee. The midwife has not time to give full advice on such occasions; but general directions might be drawn up and printed which she could distribute, and perhaps briefly explain to the expectant mother.

The increased attention now being directed to Ophthalmia will make further calls on the administrative branch of the Committee's work.

There are other directions in which the work of the Committee will doubtless expand.

It is, meanwhile, matter for congratulation that the practice of midwives is capable of being presented in so favourable a light as the tables show, and that so much has already been accomplished.

Statement by the Executive Officer, Margaret Merry Smith, M.B., Ch.B., D.P.H. Edin.

Statistics Relating to Midwives.

The number of midwives who gave notice of their intention to practise in Manchester during 1908 was 147; of these 25 reside without the City.

The following table (A) gives particulars relating to midwives practising in Manchester, and sets forth their qualifications prior to entry on the Midwives' Roll. It will be seen that more than 68 per cent. are certificated midwives.

It also contains under the separate headings the number of labours attended by midwives, the cases of Puerperal Fever, with other details in relation to these, and the number of withdrawals and suspensions, with the reasons therefor.

Details of the Work of the Executive Officer.

Inspection Visits to Midwives.

347 inspection visits were paid to midwives. In 258 cases the midwife was at home.

The number of instances in which interviews were sought by midwives at the Town Hall was 139.

TABLE A.—PARTICULARS RELATING TO MIDWIVES PRACTISING IN MANCHESTER IN 1908.

Qualification of Midwife.		Bona-fides.	St. Mary's Hospital.	Maternity Hospital.	London Obstetric Society.	Queen Charlotte Hospital.	Liverpool Lying-in Hospital.	Rotunda Hospital.	Central Midwives Board.	Total.	Column.
No. notifying their intention to practise in Manchester in 1908	Resident in Manchester...	37	21	15	29	1	3	1	15	122	1
	Resident outside Manchester...	10	6	2	5	...	...	...	2	25	2
No. removing from Manchester area.....		2	1	...	3	...	...	1	2	9	3
No. given up practice		...	...	1	...	...	...	...	...	1	4
No. who have died.....		...	1	...	...	...	...	...	...	1	5
No. suspended *sine die*		...	...	1	...	...	...	...	...	1	6
No. removed from Roll.....		1	...	...	...	...	...	...	...	1	7
No. of births attended by midwives under the heading given		3356	2990	1524	2868	18	275	...	467	11498	8
No. of cases of puerperal fever attended by midwives under the heading given		16	13	10	7	...	...	...	2	*48	9
Deaths amongst cases of puerperal fever attended by midwives		5	3	1	...	...	...	...	...	9	10
Per cent. of puerperal fever amongst all cases attended		0·48	0·43	0·66	0·24	...	...	...	0·43	0·42	11
Per cent. of puerperal fever amongst cases attended by midwives having puerperal fever in their practice		1·27	0·82	1·45	1·50	...	...	...	0·93	1·14	12
†No. of suspensions or withdrawal from practice on account of	Puerperal fever.....	15	14	8	12	...	...	...	2	51	13
	Suspicious cases	1	2	...	2	...	...	...	...	5	
	Ophthalmia, septic thumb, other causes	3	1	1	...	...	...	...	...	5	14

* In addition to these were three cases attended by midwives in Institutions.

† Seven midwives were each suspended or withheld twice, one three times, and three four times.

The routine method of inspection outlined in the report for 1905 was again followed.

1.—Examination of the sanitary condition of the house:

In six instances defects were referred to the Sanitary Department and action was taken. Three houses were dirty. In each house there was either a fixed or sitz bath; these were used regularly.

2.—Inspection of the bag of appliances:

The improvement in the equipment of the bags of appliances and in the standard of cleanliness of these noted during 1906 and 1907 was maintained.

In 14 cases the conditions revealed on inspection were unsatisfactory. In five cases the contents of the bag were unsatisfactory throughout, while in the other cases they were partially unsatisfactory. In one instance it was discovered that the well-equipped bag was kept at home ready for inspection, but was not taken to the labour.

3.—Examination of registers, medical aid record books, notification books, and temperature record books.

Registers.

Entries in registers were on the whole satisfactory. In 17 cases they were badly kept.

Records of calling in Medical Aid.

The improvement in the notification of these records was well maintained, as the figures in Table H show.

Temperature Record Books.

These have been on the whole well kept.

4.—Inspection of washing dresses and aprons:

The midwives possessed an adequate supply of such clothing, and except in one or two cases the clothing worn while in attendance on their patients was clean.

Investigations of the Mode of Practice of Midwives.

The mode of practice of 75 midwives was investigated in the house of the patient throughout the year.

In all, 312 lying-in women were thus visited.

In 26 cases where the investigation was made as part of an ordinary inspection visit, the visits to lying-in women were paid with the midwife. In 128 cases the midwife was not present.

In 13 cases the visits were paid as the result of outside complaints received regarding the work done by some midwives. In 9 cases visits were paid by request of the midwives to view the condition of the house and bedding. In 51 cases the investigation was carried out because the patient developed Puerperal Fever. In 55 cases it was done because of the reasons given for calling in medical aid, in 3 cases because of still-births, in 14 cases because of deaths of new-born children, and in 1 case because of the death of a lying-in woman occurring in the practice of midwives.

In 12 cases the investigation was carried out in connection with the application for medical fees.

Handy Women.—12 visits were paid to them throughout the year. The visits were paid because these women had been in attendance on reported cases of Puerperal Fever. Similar measures of disinfection were carried out as in the case of midwives, and instructions were given as to the precautions to be taken when in attendance on lying-in women.

Puerperal Fever.

98 cases of Puerperal Fever were notified during 1908, and in addition to these three have been added, of which information was obtained from the death register. 87 cases occurred after confinement, and 14 cases after abortion. The total number of fatal cases, which includes the cases from the death register, was 24.

The day of onset of illness in 68 out of the total 101 cases was on or before the fourth day; in 98 cases it was on or before the eighth day. Of the fatal cases, 5 died within the first week after the confinement, 12 within the second; the remaining 7 died within one month.

Notifications of cases were sent in as follows:—67 cases within three days of the onset of the illness, and 88 within seven days. The midwife attended alone at the confinement in 37 cases of Puerperal Fever. In 26 of these the doctor was called in within 24 hours of the onset of the illness. In 4 cases he was called in on the second day, in 4 on the third day, in 2 on the fourth day, and in 1 on the eleventh day.

In connection with the investigation of Puerperal Fever some interesting points were noted. Two midwives had septic fingers while in attendance on these cases. One midwife attended lying-in women while her thumb was septic; no case of Puerperal Fever was reported in her practice.

If it can be done, the other cases under the care of the midwife should be visited as the following examples will show:—

(*a*) The source of the mischief, a mild septic case where the midwife was acting as nurse, was found. The notified Puerperal Fever patient died. The midwife when questioned did not give any information regarding the mild case, although she acknowledged afterwards she realised the nature of the case.

(*b*) A fatal case of Puerperal Fever occurred in the practice of a midwife who had ten other lying-in women under her care at the time. One of these women developed Puerperal Fever later and others were slightly ill.

(*c*) The midwife in attendance on the case of Puerperal Fever had a septic finger; she had under her care at the time three other cases. One woman had slight sepsis, and two of the children were ailing due to lack of care.

It is difficult at times to arrange for the nursing of lying-in women when a Puerperal Fever case occurs which has to be nursed by the midwife or when a midwife is suspended. In four instances the matrons of Bradford and Harpurhey District Nursing Homes have very kindly assisted, and have given valuable help in the emergencies.

TABLE B.—GIVING IN DISTRICTS FOR 1908 THE POPULATION OF MANCHESTER; BIRTHS AND BIRTH-RATES; CASES, ETC., OF PUERPERAL FEVER; AND THE NUMBER OF MIDWIVES RESIDENT IN EACH DISTRICT.

Statistical Divisions		Population	Births Registered		Cases of Puerperal Fever				1908 Midwives resident in Manchester.
			Number	Rate *	Total Attacks	Deaths	Attack rate per 1,000 births	Case Fatality per cent.	
City of Manchester		**648,846**	**19,041**	**28·89**	**101**	**24**	**5·30**	**23·8**	**122**
I.	Manchester Township	125,197	4,129	32·47	28	7	6·78	25·0	17
II.	North Manchester	197,527	5,673	28·27	32	10	5·64	31·2	31
III.	South Manchester	326,122	9,239	27·89	41	7	4·44	17·1	74
I.	Ancoats	43,206	1,547	35·25	8	3	5·17	37·5	5
I.	Central	24,922	654	25·83	11	2	16·82	18·2	7
I.	St. George's	57,069	1,928	33·26	9	2	4·67	22·2	5
II.	Cheetham	42,376	1,193	27·72	3	1	2·51	33·3	6
II.	Crumpsall	9,430	214	22·34	1	1	4·67	100·0	..
II.	Blackley	9,830	288	28·84	3	1	10·42	33·3	..
II.	Harpurhey	23,318	515	21·74	3	..	5·83	..	6
II.	Moston	20,826	536	25·34	2	1	3·73	50·0	4
II.	Newton	39,153	1,226	30·83	8	2	6·52	25·0	8
II.	Bradford	25,355	868	33·70	4	..	4·61	..	4
II.	Beswick	12,588	425	33·24	6	4	14·12	66·7	1
II.	Clayton	14,651	408	27·42	2	..	4·90	..	2
III.	Ardwick	45,324	1,277	27·74	6	2	4·70	33·3	5
III.	Openshaw	29,040	973	32·99	4	..	4·11	..	7
III.	West Gorton	32,316	969	29·52	6	2	6·19	33·3	8
III.	Rusholme and Kirkmanshulme	27,007	904	32·95	4	1	4·42	25·0	8
III.	Chorlton-upon-Medlock	55,597	1,352	23·94	7	..	5·18	..	15
III.	Hulme	62,629	2,259	35·51	7	1	3·10	14·3	13
III.	Moss Side	28,522	635	21·92	5	1	7·87	20·0	11
III.	Withington	45,687	870	18·75	2	..	2·30	..	7

* These rates are based on a yearly population of 53 weeks.

Section of Table B giving the number of Midwives resident outside but practising in Manchester.

Salford	11
Failsworth	2
Stretford	4
Gorton	2
Reddish	1
Levenshulme	4
Droylsden	1
Total	25

TABLE C.—SHOWING THE NUMBER OF CASES OF PUERPERAL FEVER OCCURRING WEEK BY WEEK DURING 1908, ACCORDING TO DATE OF ONSET.

1st Quarter			2nd Quarter			3rd Quarter			4th Quarter		
Jan.	4	5	April	4	2	July	4	2	Oct.	3	6
	11	5		11	4		11	–		10	–
	18	2		18	1		18	1		17	–
	25	2		25	1		25	4		24	1
Feb.	1	3	May	2	–	Aug.	1	5		31	2
	8	3		9	–		8	3	Nov.	7	1
	15	–		16	2		15	3		14	1
	22	4		23	1		22	2		21	1
	29	1		30	–		29	1		28	3
March	7	2	June	6	–	Sept.	5	3	Dec.	5	–
	14	2		13	1		12	5		12	2
	21	5		20	2		19	2		19	–
	28	2		27	1		26	–		26	1
									Jan.	2	1
TOTAL		36			15			31			19

TOTAL—101.

TABLE D.—RELATING TO THE CASES OF PUERPERAL FEVER ATTENDED EITHER BY MIDWIVES OR DOCTORS DURING THE YEARS 1905, 1906, 1907, and 1908.

Year	Number of cases attended by							
	MIDWIVES		DOCTORS		MIDWIFE AND DOCTOR		TOTAL	
	Attacks	Deaths	Attacks	Deaths	Attacks	Deaths	Attacks	Deaths
1905	41	11	31	11	10	3	82	25
1906	32	6	54	20	17	4	103	30
1907	35	4	39	9	21	7	95	20
1908	37	7	50	13	14	4	101	24

TABLE E.—SHOWS WHERE PATIENTS SUFFERING FROM PUERPERAL FEVER WERE TREATED, AND THE RESULTS OBTAINED, IN 1908.

Cases treated at	Total No. of Cases	No. Recovering	No. of Deaths	Case Mortality per cent.
Monsall Hospital*	67	52	15	22·4
Home	25	20	5	20·0
Other Institutions	9	5	4	44·4
Total.....	101	77	24	23·8

* The apparent discrepancy between these figures and those given on page 23 is owing to the fact that two cases were admitted into Monsall Hospital from districts outside Manchester.

TABLE F.—SHOWING FOR CASES OF PUERPERAL FEVER THE CHARACTER OF THE LABOUR AND THE RESULTS FOR 1908; ALSO THE CLASSIFICATION OF ABNORMAL CASES, AND CASES IN WHICH PERINEAL TEAR WAS STATED TO BE PRESENT.

	No. of Cases	Recovery	Death
Normal full term labour	54	39	15
Abnormal full term labour.....	33	26	7
Abortion	14	12	2
Abnormal Labour.			
Forceps	22	17	5
Adherent placenta manual removal	5	5	..
Placenta prævia	4	3	1
Retained placenta (not removed)	..	..	..
Ante and post partum hæmorrhage	2	1	1
Induced labour.....	..	..	..
Precipitate labour	..	..	..
Perineal tear stated to be present.			
Labour normal	9	8	1
Abnormal	10	9	1

Records of calling-in Medical Aid under Rule E 19 of the Central Midwives' Board, and Payment of Fees in connection therewith.

During the year 1908, the number of medical records received was 1,634, as compared with 1,514 in the previous year. 1,151 of the records were for cases occurring in the private practice of midwives, whilst 483 were in connection with the various lying-in charities. The corresponding figures for 1907 were 1,146 and 368 respectively. The increase was largely in the "labour" group of emergencies requiring medical aid. From these facts it would appear that the midwives are realising the importance of the above-mentioned Rule.

Enquiries were made into 99 cases where the medical practitioners had been called in because of rise of temperature, quickened pulse rate, rigor, foul-smelling discharge or other symptoms of Puerperal Fever. In 30 of these cases the mother was subsequently notified as suffering from Puerperal Fever.

Enquiries were also made in some cases where inflammation of the child's eyes was reported.

The records are classified in the following table under the various causes for which medical aid was sought. (See Table H on next page.)

As regards the payment of fees to medical practitioners, under the scheme outlined in the report for 1905, 315 applications were received during the year. These were considered by the Medical Sub-Committee, and they recommended that payment should be made in 272 cases, amounting to £279 4s. 6d. Of the 43 cases which were rejected as not fulfilling the conditions, in 28 instances the income was above the scale, whilst 13 did not fulfil in various respects the conditions under which the fee is paid. One duplicate application was received, and a Board of Guardians paid one fee.

Still-Births.

The total number of still-births during 1908, of which there is any return, was 888, as compared with 818 in the previous year.

TABLE H.—NUMBER OF CASES OCCURRING IN 1908 IN WHICH THE MIDWIFE ADVISED THAT A REGISTERED MEDICAL PRACTITIONER SHOULD BE SENT FOR (RULE E 18). ALSO THE NUMBER OF APPLICATIONS FROM MEDICAL PRACTITIONERS FOR PAYMENT OF THEIR FEES FOR ATTENDING CERTAIN EMERGENCY CASES.

Period	Medical aid called in on account of the following causes, as stated by the Midwife			Total	Private Cases	Hospital outdoor cases	Application for † Fees
Pregnancy	Abortions, miscarriages			30	22	8	3
	Deformed pelvis			..	..	..	..
	Loss of blood			7	6	1	1
	Other unusual features of pregnancy			17	11	6	2
Labour	Presentations	Head	Occipito posterior	11	10	1	20
			Brow	3	2	1	3
			Face	25	21	4	13
			Abnormal	4	4	..	3
		Breech	In primiparæ	14	10	4	5
			In multiparæ	1	1	..	..
			Para not stated	25	22	3	12
		Knee		2	2	..	..
		Foot		13	11	2	2
		Hand or arm		8	5	3	6
		Transverse		17	14	3	15
		Funis		34	25	9	14
		Placenta Prævia		12	10	2	8
		Unable to make out		8	4	4	..
	Tedious labour	Forceps used		31	30	1	*81
		No record as to forceps		353	289	64	8
	Placenta	Retained		46	27	19	7
		Adherent		30	29	1	18
	Membranes retained			65	31	34	5
	Rupture of perineum			183	116	67	38
	Hæmorrhage	Ante partum or accid.		58	32	26	11
		Post partum		50	39	11	16
	Convulsions			12	10	2	2
	Complications			39	23	16	3
	Others			5	3	2	1
	Premature labour			12	8	4	..
Lying-in	Abdominal swellings			..	..	..	..
	Foul-smelling discharges			2	2	..	2
	Post partum hæmorrhage			..	..	..	..
	Rigor			4	4	..	..
	Rise of temperature above 100·4° F.			81	43	38	8
	Unusual swelling of breasts			13	11	2	1
	Progress unsatisfactory or complications			61	29	32	3
Newly-born Child	Injuries received during birth			..	..	..	..
	Obvious malformations			36	18	18	1
	Tongue tied			16	13	3	..
	Feebleness of Child			77	59	18	2
	Inflammation of eyes, eyelids, and ears			54	26	28	..
	Skin eruption			8	8	..	..
	Illness from prematurity			107	70	37	..
	Malignant jaundice			13	11	2	..
	Inflammation about the umbilicus			..	..	..	..
	Unspecified or complications			47	40	7	1
	TOTALS			1,634	1,151	483	315

* In addition to the 81 cases of tedious labour in which forceps were used, instrumental aid was also required in 43 of the other cases of labour.

† These applications have been classified according to the conditions requiring treatment found by the medical practitioner.

This number includes 539 still-births which occurred in the practice of doctors, and 349 which occurred in the practice of midwives. The numbers for 1907 were 500 and 318 respectively.

Through the courtesy of the Parks and Cemeteries Committee, and of Registrars of several Cemeteries in Manchester not under their management, the Midwives' Supervising Committee receives a list of all still-births registered for burial. Midwives are required by law to notify all still-births occurring in their practice within 24 hours.

A fairly complete return is therefore available.

Through the Cemeteries' return, 776 still-births were notified ; 539 of these were doctors' cases, and 237 midwives' cases. 112 still-births attended by midwives were notified by them alone in addition to the 237 cases returned by the Cemeteries, and also notified by them. There is an increase in the number notified through the Cemeteries, but the return is not yet complete. The midwives have been requested, when notifying a still-birth, to state, if possible, the place of burial. This was given in 306 instances, leaving 43 unaccounted for. An effort will be made in the future to ascertain accurately the place of burial of all still-births occurring in the practice of midwives.

The still-births have been classified in districts ; those occurring in the practice of doctors and midwives are shown in separate columns.

This classification shows the percentage of live and still-born children, and the still-birth-rate. The still-birth-rate is calculated on the returns from midwives, as these returns are very complete.

It will be seen that the percentage of still-born children is 3·9 ; in 1907 it was 3·7, and the still-birth-rate 0·54 per 1,000 of the population in midwives' practice.

The districts in which the still-birth-rate is highest are Crumpsall, Bradford, Ancoats, Withington, St. George's, Moss Side, Ardwick, and Hulme. These are given in order, beginning with the district in which the still-birth-rate is highest. (See Table I on next page.)

TABLE I.—TOTAL NUMBER OF BIRTHS REGISTERED IN 1908; ALSO THE NUMBER OF STILL-BIRTHS OCCURING IN THE PRACTICE OF MEDICAL PRACTITIONERS AND MIDWIVES, AS OBTAINED FROM THE RETURNS OF BURIALS AT VARIOUS CEMETERIES.

Statistieal Divisions		Births Registered	Still-births Classified from Cemetery Returns		Proportion Per Cent.			Total Still-births notified by Midwives	Still-birth-rate per 1,000 of the Population in the praetice of Midwives	Total Still-birth-rate return from Cemeteries
			Doetors' Cases	Midwives' Cases	Born Living	Still-born				
						Doetors' Cases	Midwives' Cases			
City of Manchester		**19,041**	**539**	**237**	**96·1**	**2·7**	**1·2**	**349**	**0·54**	**1·20**
I.	Manchester Township	4,129	137	81	95·0	3·1	1·9	98	0·78	1·74
II.	North Manchester	5,673	146	48	96·7	2·5	0·8	86	0·44	0·98
III.	South Manchester	9,239	256	108	96·2	2·7	1·1	165	0·51	1·12
I.	Ancoats	1,547	58	32	94·5	3·5	2·0	40	0·93	1·86
I.	Central	654	11	10	96·9	1·6	1·5	15	0·60	0·84
I.	St. George's	1,928	68	39	94·8	3·3	1·9	43	0·75	1·87
II.	Cheetham	1,193	36	4	96·8	2·9	0·3	14	0·33	0·94
II.	Crumpsall	214	13	3	93·0	5·7	1·3	2	0·21	1·70
II.	Blackley	288	3	..	99·0	1·0	..	9	0·92	*1·23
II.	Harpurhey	515	10	1	97·9	1·9	0·2	9	0·39	0·47
II.	Moston	536	10	2	97·8	1·8	0·4	5	0·24	0·58
II.	Newton	1,226	27	10	97·1	2·1	0·8	18	0·46	0·95
II.	Bradford	868	31	20	94·4	3·4	2·2	15	0·59	2·01
II.	Beswick	425	13	5	96·0	2·9	1·1	7	0·56	1·43
II.	Clayton	408	3	3	98·6	0·7	0·7	7	0·48	0·41
III.	Ardwick	1,277	42	19	95·5	3·1	1·4	26	0·57	1·35
III.	Openshaw	973	30	10	96·0	3·0	1·0	19	0·65	1·38
III.	West Gorton	969	5	2	99·3	0·5	0·2	8	0·25	0·22
III.	Rusholme and Kirkmanshulme	904	17	1	98·2	1·8	1·0	14	0·52	0·67
III.	Chorlton-upon-Medlock	1,352	36	16	96·3	2·6	1·1	18	0·32	0·94
III.	Hulme	2,259	56	50	95·5	2·4	2·1	69	1·10	1·69
III.	Moss Side	635	25	5	95·4	3·8	0·8	5	0·18	1·05
III.	Withington	870	45	5	94·6	4·9	0·5	6	0·13	1·09

* Still-births from all sources

Midwives Reported to the Central Midwives' Board on Charges of Malpractice, Negligence, or Misconduct.

During the year the Midwives' Supervising Committee, in considering the various reports submitted to them, decided that *prima facie* cases of negligence or misconduct had been established against four midwives, and reports respecting these were forwarded to the Central Midwives' Board.

The following are the charges on which such action was based :—

1.—Midwife A in January failed to advise calling in medical aid for a serious perineal tear, a foul-smelling discharge with a history of illness and inflammation of the eyes of a child. She failed to visit her cases regularly during the puerperium, and did not carry out antiseptic and cleansing precautions. The temperature and pulse were not taken in two specific instances, death taking place in one of the cases. Her registers were not entered up. The Central Midwives' Board censured the midwife, and requested to be furnished with a report at the end of three months as to her observance of their Rules. This report was satisfactory. In November a complaint was received concerning her, and it was ascertained that she had failed to visit regularly during the puerperium, had not advised calling in medical aid for persistently offensive lochia, had not notified the occurrence of two still-births in her practice, and had not entered certain cases in her register. She was again reported to the Central Midwives' Board, who removed her name from the Roll.

2.—Midwife B failed for three days to advise calling in medical aid for a woman who had rigor, headache, abdominal pain, and foul-smelling discharge. The patient died. The Central Midwives' Board cautioned the midwife, and asked for a report at the end of three months. This report was satisfactory.

3.—Midwife C failed for two days to advise calling in medical aid for a woman suffering from abdominal pain, headache, and feverishness ; also in a complicated presentation case. She failed to take cleansing precautions before making examinations. The Board censured her, and the further report required by them is not entirely satisfactory.

4.—Midwife D resides at a beerhouse. It was considered undesirable for her to practise midwifery from such a house, and she was therefore suspended from practising while residing there. The midwife continued to practise, and did not notify her intention to do so as required by Section 10 of the Midwives Act. Legal proceedings were taken in January, 1909, and she was fined 20s. and costs. The Central Midwives' Board censured her, and request a further report. The period for this has not yet expired.

Death of Mother or New-born Child.

One notification was received of the death of a mother before the attendance of a medical practitioner could be obtained. An inquest was held, the verdict being "Death from Cardiac Syncope."

Notifications of 34 deaths of new-born children have been received, and of these 14 were investigated.

Enquiries were made by the City Coroner into the causes of these deaths. In 24 instances inquests were held and 10 were returned as uncertified.

The causes of death were given as follows:—

	Inquest cases.	Uncertified deaths.
Accidental suffocation	14	0
Atelectasis	3	0
Convulsions	1	0
Defective vitality	0	1
Premature birth	0	9
Want of attention at birth ..	4	0
Hæmorrhage	2	0
	—	—
	*24	10

* Post-mortem examinations were made in 21 cases.

The districts in which these deaths occurred were:—St. George's, 7; Hulme, 5; Ancoats, Ardwick, and Chorlton-upon-Medlock, 4 each; Central, 3; Bradford and Openshaw, 2 each; Blackley, Beswick, and Withington, 1 each.

General Remarks.

The improvement noted in all departments of the work during the last two years has continued, and it is gratifying to see the efforts made by the midwives to do the best for their patients.

The interest taken by them in after care may be judged by the fact that about sixty voluntarily notify weekly to the Medical Officer of Health the births which occur in their practice.

This entails a considerable amount of clerical work, and when it is remembered that those who do it find clerical work exceedingly irksome, the service thereby rendered to the cause of the reduction of infantile mortality is the more appreciated.

The early notification of births thus received enables the health visitor to visit cases immediately after the midwife has ceased attendance, and renders possible an efficient system of after care of both mother and child.

The arrangement has worked well, and there has not been friction between the midwives and the health visitors.

Voluntary notifications of births are, of course, not used in any way for the official supervision work of the midwives.

11,498 women in labour were attended by midwives during 1908, the number attended during 1907 was 11,128.

It cannot be repeated too often that midwives attend more than half the labours in Manchester, and in some of the districts an even larger proportion, and that the way in which their work is done has a great effect on the well-being and happiness of the community.

Any effort which will tend to stimulate their interest in matters affecting their patients is worth undertaking.

Two sets of addresses on the rules similar to those given in 1907 were given in the beginning of the year at the Town Hall, and were well attended. The number of midwives who attended one or more of the addresses was 80, and the average attendance was 19.

In all the districts the midwives report that on the whole the women are making better provision for their confinement in the way of clean clothing, etc. From time to time cases occur where no provision is made either in the way of clothing or cleanliness. Usually in such cases there is also no provision made for payment, and the midwife finds herself confronted with the risk of sepsis occurring in her practice, in addition to the disagreeable business of undertaking work under such conditions and of harassing the patient and neighbours for clean clothing and money.

A few of such cases have been visited at the request of the midwife in attendance. Details of two of these are interesting.

In one case the woman was confined on a couch 18 inches wide. On this she lay after her confinement, the new-born child, according to her statement, sleeping between her and the wall.

This condition of affairs was voluntary. She was not poor; she had two good beds upstairs but refused to have one brought down as she intended to get up soon. She got up on the second day, and was up daily afterwards. She lay on the couch, but provided a cot for the child.

In another case visited recently the condition of affairs was as follows:—

The woman had been given eight weeks' notice to quit her house as the rent was in arrears. She was turned out of the house on Thursday, and the family, including husband, wife, and four children, were taken in by a neighbour. On Saturday labour began, and on Sunday morning early, the midwife, who had not been engaged, was sent for. When she came she found child and placenta born. There was no provision of any kind in the way of clothing for the child, and it had to be wrapped in paper until a neighbour produced a skip and rags to make into a shirt and napkins. The binder was a piece torn from the only blanket on the bed. The bed was guiltless of sheets.

On Monday at the time of the inspection visit, the provision of a set of clothing for the child was the only change in the situation. The child was clothed as already described. The midwife received 4s. before leaving on Sunday morning, the only money she was likely to get, and that was given only on urgent demand.

The husband was reported to be in regular work, and was earning 18s. a week.

Fortunately, the poorest in the Central districts are now attended by midwives residing in St. Mary's Hospitals, Whitworth Street, or in the Hostel which has just been established in Livesey Street by this Lying-in-Charity. The pupil midwives are trained in district work in this area. It is much easier for these midwives, backed up directly by the authority of the Hospital, to cope with the problems incidental to midwifery among the very poor than it is for an isolated midwife to do so.

Excellent work is being done by these district midwives.

In October of this year the Manchester Mothers' Guild started work in Mill Street Institute, Ancoats. The Guild is run on the lines of the St. Pancras School for Mothers.

Meals are given to expectant and nursing mothers for 2d. per day, and during the lying-in period food is sent, if required, to members. Educational work is also carried on, and there is a Provident Club. The nursing mothers return to have the child weighed regularily until it is a year old.

The midwives report that where patients are members there is a high standard of preparation for the labour as compared with others of their class.

Stimulated by the example of the Mothers' Guild, similar schemes have been started in the Collyhurst district, and in another district of Ancoats.

A centre of such work is wanted in every district, and would do much to raise the standard of preparation required for a confinement and of care to be given to the new-born child. It would be a boon to the midwives.

The question of the supply of midwives after 1910 is not an urgent question in Manchester. In one or two districts there is a shortage, but in others there is an over supply.

97 midwives, who were on the register when the active inspection work began in 1905, still practise.

During the year 18 new midwives notified their intention of practising; of these 11 are continuing during 1909, the others were doing temporary work.

Extract from a Report by Dr. A. Knyvett Gordon, Medical Superintendent of the Monsall Fever Hospital, in reference to the treatment of cases of Puerperal Fever in Hospital during 1908.

PUERPERAL FEVER.

The total number of cases admitted during 1908 is the largest yet recorded. viz., 69, and the death-rate has diminished to 20·3 per cent.

Inasmuch as the admission of cases of Puerperal Septic disease and their treatment on surgical lines is now well established, it seems hardly necessary to give the particulars of each case as has formerly been the custom. I append, however, a few notes on the series taken as a whole, together with an analysis of the fatal cases and of those in which, in addition to the customary disinfection of the uterus, it was thought advisable to open the abdominal cavity. No mention will be made of details which bear only on œtiology, as these can be studied more profitably in the records of all cases occurring in the City, and not of those only which were admitted to Monsall.

Of the 69 cases admitted, 61 (88 per cent.) were treated on admission by disinfection of the uterus. For this purpose the whole surface was first curetted with a sharp instrument, followed by rubbing with swabs wrung out of undiluted Izal fluid, the uterus and vagina being subsequently packed with gauze soaked in a weaker solution of the same germicide. Neither intrauterine nor vaginal douching has been employed at Monsall in the acute stage of any case for 2½ years. Of the 8 cases which were not treated in this manner, one was moribund on admission, and the patient died a few hours later; one had been curetted before admission; in three others the uterus had contracted well, and the procedure was not thought to be necessary. In the remaining four instances, the patients were not admitted until the acute stage had passed, though they were suffering somewhat severely from later complications of the disease.

As regards the bacteriology of the cases, a detailed examination was made in 61 instances. Of these, the infecting organism was found to be a streptococcus alone in 51. In three, bacillus coli communis was present alone, and in two more in conjunction with a streptococcus, and in one with B. proteus. The pneumococcus was found alone in one case, and staphylococci of one kind or another in three more. All these organisms were found in cultures taken from the interior of the uterus on admission.

On the assumption that the incubation period of Puerperal Sepsis, except in rare instances, does not exceed 48 hours, infection took place at the time of delivery, or immediately after, in 27 cases out of the 67 in which an accurate history was obtained, and in the remainder during the puerperium. Though a medical man was present at the confinement in the majority of these 40 cases, he would not, as a rule, have occasion to make an internal examination at visits paid subsequent to the confinement, so he cannot very well be held directly responsible for the infection of the patient. It is important to bear this point in mind, as it is within my experience that the medical attendant has often either received or assumed blame for these later infections.

The average time elapsing between the onset of the septic symptoms and the admission of the patient to hospital was 5·44 days, which is one day longer than in the 1907 cases. It is much to be regretted from the clinical point of view that this interval is so long, as there can be no doubt that the success or otherwise of the surgical treatment and of the skilled nursing which are obtainable in hospital depends to a great extent on the time at which they become available. The great majority of our patients have not been adequately nursed before their admission, and many have shown signs of great neglect in the shape of bed-sores and ulceration of the mouth.

In seven cases, the infection followed severe laceration of the uterus or vagina from the use of forceps at the time of delivery. In one case, on the other hand, the laceration appeared to be due to the omission to accelerate delivery by their employment.

The cause of death in the 14 fatal cases was of follows :—

In one, Pneumonia; here there was a history of chronic bronchitis previous to confinement.

In one, Pulmonary Tuberculosis, of old standing, which became much worse after confinement.

In six, General Peritonitis, in five of which the condition was present on admission.

In one, severe lacerations, following the use of forceps.

In one, intense inflammation of the uterus, for which hysterectomy was unsuccessfully performed.

In one, Pelvic Peritonitis.

In one, Generalised Septicæmia.

Two more patients were moribund from Generalised Septicæmia on admission, and died a few hours later.

In addition to the operative treatment required for disinfection of the uterus as previously mentioned, the abdominal cavity was opened in the following 14 cases :—

Generalised Suppurative Peritonitis was present alone in eight cases. In one of these, the general condition did not admit of anything further than simple drainage of the peritoneal cavity through the abdominal incision ; this patient died 48 hours later. In three more instances, drainage was established also through an incision through the posterior vaginal fornix ; in two of these, multiple abscesses of the uterus were present, but the patients' condition did not permit of hysterectomy being performed also. All of these died.

In four more cases pyosalpinx was present in addition to General Peritonitis, and the diseased tubes were removed, drainage being established also through the vagina. Three of these recovered, in one of which there was also a small suppurating ovarian cyst, which was removed with the appendages.

In the next group, Pelvic Peritonitis of a severe type was present, but the upper part of the peritoneal cavity was not affected. One of these patients was in extremis, and was treated by vaginal incision and drainage only. She did not recover.

In two more, abscesses of the uterine wall were present, and the patients were treated by combined vaginal and abdominal drainage with packing off of the uterine area from below with large quantities of antisceptic gauze ; these recovered. One other patient was treated by abdominal drainage with simple ligature of one Fallopian tube ; she recovered.

In the next group, the uterus was removed on account of its intensely septic condition, in each case abdominally ; one patient recovered and one died.

These operations were of necessity performed in the acute stage of the illness, and at a time, therefore, when the inflamed condition of the parts rendered the procedures more than usually difficult. The resistance of the patients was also lowered in each case by pyrexia of some days' duration. I wish to make it clear that, whenever possible, abdominal operations were avoided in the acute stage of Puerperal Sepsis, and that they were only undertaken when the condition of the pelvic organs constituted an obvious and immediate risk to life. Almost every patient suffered from pelvic inflammation of some degree during residence, but the great majority recovered without operative treatment other than that required for the disinfection of the uterus.

The duration of the average stay in hospital of the patients who recovered was 42 days. Whenever possible, rest in bed was enforced for at least three weeks, but in some instances the patients were discharged at their own request on account of their anxiety about the condition of their home or children. In the treatment of Puerperal Sepsis this factor unfortunately gives rise to considerable difficulty. I am convinced that a prolonged stay in hospital is essential if the recovery is to be permanent, for otherwise the patients after an interval are apt to become chronic invalids; but it frequently happens that when the wife is in hospital the children are neglected, and many women have felt bound to return to their home before their cure was really complete; moreover, the great majority of our patients cannot afford to rest in their own homes after discharge from hospital.

On behalf of the Committee,

A. W. CHAPMAN,

Chairman.

Town Hall, Manchester,
27th May, 1909.

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